CCD-TR31/TR303/TR303PK
RMT-507

SERVICE MANUAL

US Model
Canadian Model
CCD-TR31
E Model
CCD-TR303/TR303PK

10x
SONY
Video 8
Handycam

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

Video8
Handycam

A MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ" (9-973-199-11).

SPECIFICATIONS

System

Video recording system	Two rotary heads, Helical scanning FM system
Audio recording system	Two rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette (standard 8 mm)
Tape speed	SP mode: Approx. 1.43 cm (19/32 inches) /s LP mode: Approx. 0.72 cm (5/16 inches) /s (playback only)
Recording time	SP mode: 2 h (P6-120)
Playback time	SP mode: 2 h (P6-120) LP mode: 4 h (P6-120)
Fastforward/rewind time	Approx. 6 min 30 s (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (monochrome)
Lens	Combined 10 × power zoom lens f = 6.2 to 62 mm (1/4 to 1 7/16 inches) F 1.6 to F2.9 (45 to 450 mm when converted to a 35 mm still camera) Filter diameter 37 mm (1 1/2 inches) TTL autofocus system inner focus wide macro system
Color temperature	Auto
Minimum illumination	1 lx (F 1.6)
Illumination range	1 lx to 100,000 lx
Recommended illumination	More than 100 lx

Input and output connectors

Video output	Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio output	Phono jacks −7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ
RFU DC OUT	Special minijack, DC 5 V
Remote jack	Stereo mini-minijack (Ø 2.5 mm)
MIC jack	minijack, −66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (Ø 3.5 mm)

— Continued on next page —

8 VIDEO CAMERA RECORDER

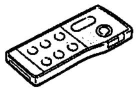
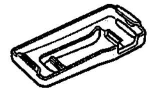
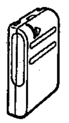
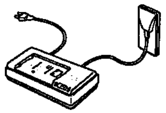
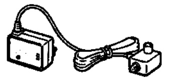
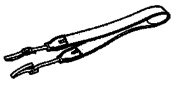
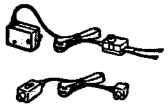
SONY®

MICROFILM

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor)
Average power consumption	5.3 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage temperature	−20 °C to +60 °C (−4 °F to 140 °F)
Dimensions	Approx. 109 × 109 × 178 mm (w/h/d) (4 3/8 × 4 3/8 × 7 1/8 inches)
Mass	About 770 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap About 1,000 g (2 lb 3 oz) including the battery pack NP-55, lithium battery CR2025, cassette P6-120, and shoulder strap
Microphone	Electret condenser microphone, monaural type

Supplied accessories

• Wireless Remote Commander (1) 	• Remote Commander holder (1) 	• Battery pack NP-55 (1) 
• AC power adaptor AC-V35 (1) 	• Lithium battery CR2025 (2) (for camcorder/for the Remote Commander)	• RFU adaptor RFU-90UC (1)  US/Canadian model
• Shoulder strap (1) 	• RFU adaptor RFU-89NA with an antenna selector (1)  E model	

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

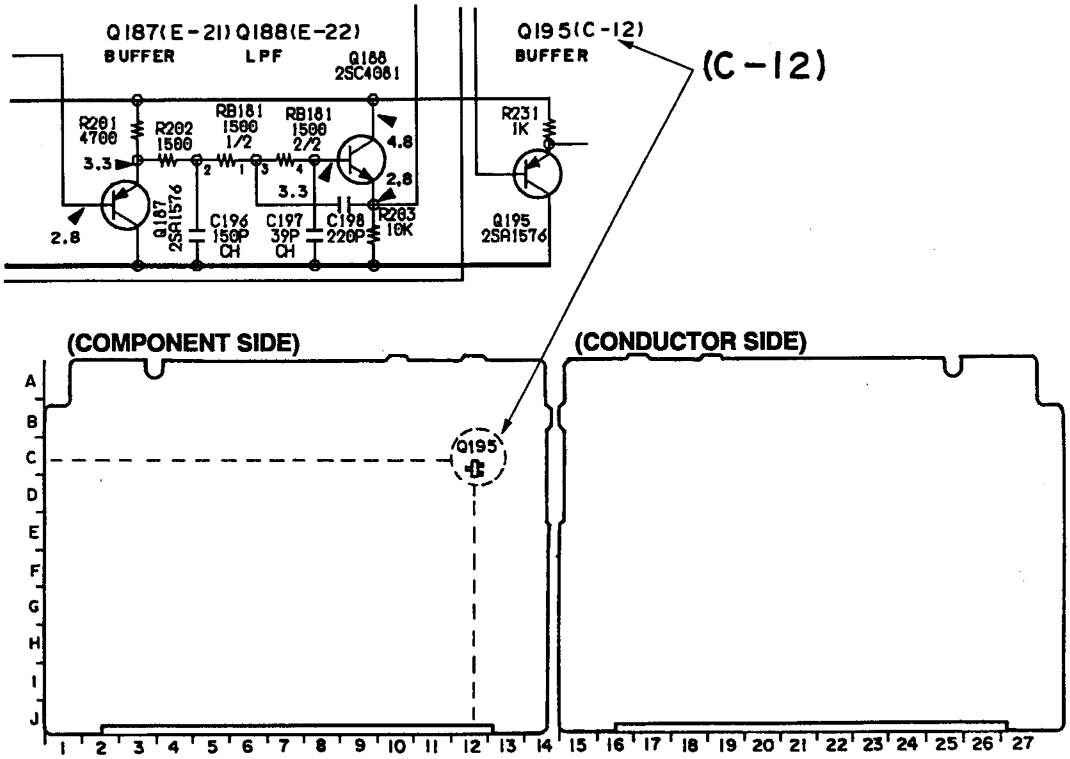
[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 95 and 107.)

This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
R231
1K
Q195
2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
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J
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✖] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

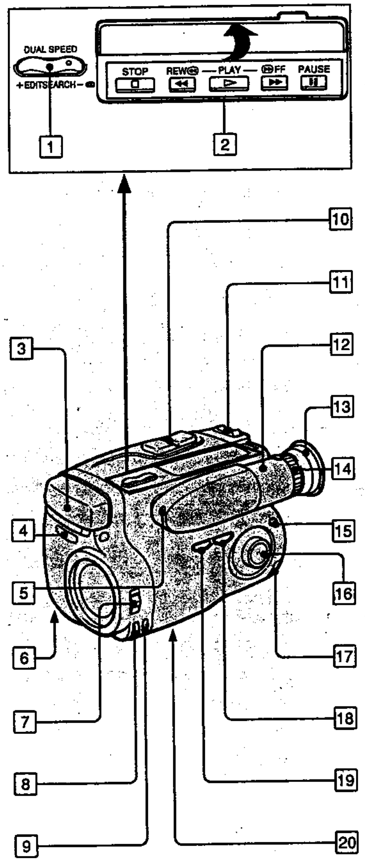
[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from CCD-TR31 instruction manual.

Identifying the Parts



For details on the use of each part, refer to the pages indicated in the parenthesis.

1 EDITSEARCH button (27)

2 Tape transport buttons (19), (37)
□ STOP (stop)
◀◀ REW (rewind)
▷ PLAY (palyback)
▶▶ FF (fast forward)
❚❚ PAUSE (pause)

3 Built-in microphone (monaural)

4 Remote sensor (20)

5 Camera recording/battery lamp (16)

6 Hook for shoulder strap

7 LENS COVER switch (14)

8 Focus dial (32)

9 FOCUS button (32)

10 Power zoom button (17), (32)

11 POWER switch

12 Viewfinder (13)

13 Eyecup

14 Viewfinder lens adjustment ring (13)

15 FADER button (34)

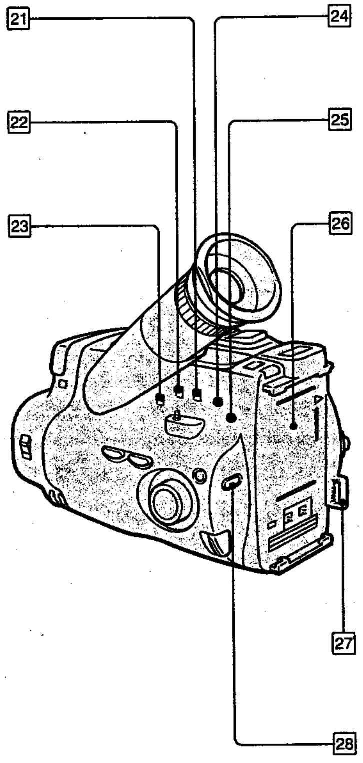
16 PROGRAM AE dial (33)

17 BATT (battery eject) knob (9)

18 TIME (NEXT) button (10), (26), (29)

19 DATE (+) button (10), (26), (29)

20 Lithium battery compartment (6)



21 EDIT switch (39)

22 REMOTE COMMANDER ON/OFF switch (20)

23 BEEP switch (12)

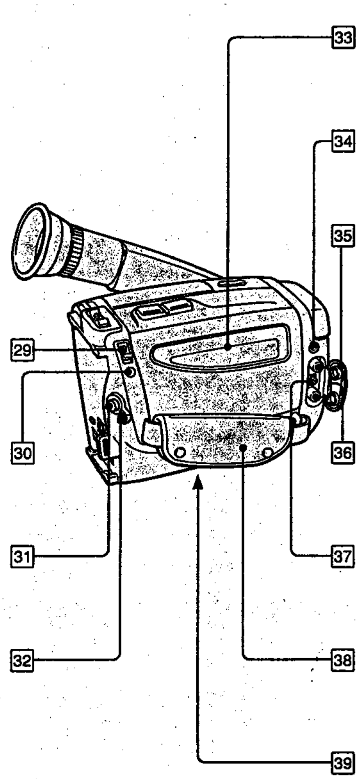
24 DST (daytime saving) button (11)

25 AREA button (29)

26 Battery mounting surface (9)

27 Hook for shoulder strap

28 COUNTER RESET button (15)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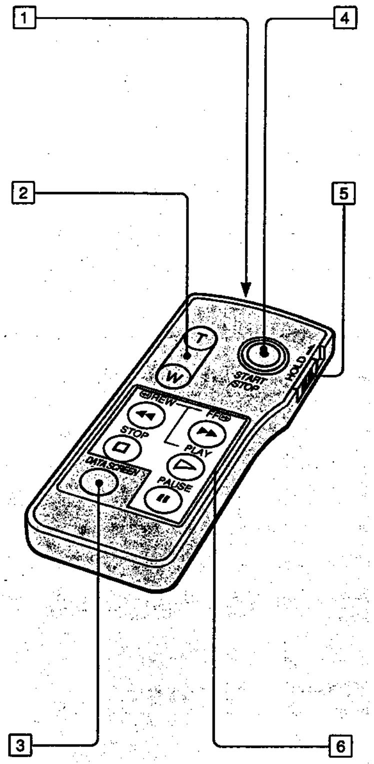
- 29 EJECT button (12)
- 30 ⓘ remote control jack (stereo mini-minijack)
- 31 START/STOP button (15)
- 32 STANDBY switch (13), (15)
- 33 Cassette compartment (12)
- 34 MIC jack (PLUG IN POWER) (monaural minijack) (28)
- 35 Jack cover
- 36 VIDEO/AUDIO output jacks (phono jack) (35)
- 37 RFU DC OUT (DC output) jack (18)
- 38 Grip strap cover
- 39 Tripod receptacle

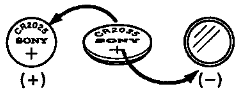

1
2
3
4
5
6
T
W
START/STOP
HOLD
REW
FF
STOP
PLAY
PAUSE
DATA SCREEN

Remote Commander

- 1 Transmitter
- 2 Power zoom button (17), (32)
- 3 DATA SCREEN button (37)
- 4 START/STOP button
- 5 HOLD switch (20)
- 6 Tape transport buttons (19), (37)
  - ◀◀ REW (rewind) button
  - ▶▶ FF (fast forward) button
  - ☐ STOP button
  - ▷ PLAY (playback) button
  - ❚❚ PAUSE button

Inserting the Lithium Batteries

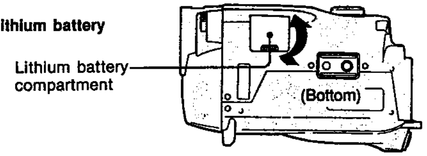
Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander.
Well, the lithium battery has a positive (+) side and a negative (−) side as illustrated below. **Be sure to install the lithium battery with the positive side facing out.**



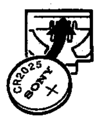
Inserting the Lithium Battery into the Camcorder

To activate the clock and the world clock, you must insert a lithium battery. Make sure you use one of the supplied lithium batteries.

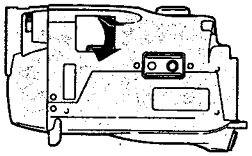
1 **Detach the lid of the lithium battery compartment.**



2 **Install one of the supplied lithium batteries with the positive (+) side facing out.**



3 **Replace the lid.**

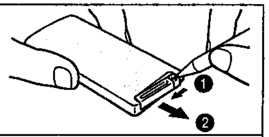


To change the lithium battery
Detach the lid of the lithium battery compartment, and replace the lithium battery with a new one.
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, resetting of the date and time will be necessary.

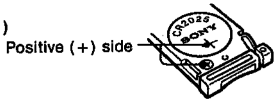
Inserting the Lithium Battery into the Remote Commander

First, you have to insert the lithium battery into the Remote Commander. Use one of the supplied CR2025 lithium batteries.

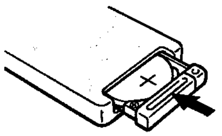
1 **Pull out the lithium battery holder from the Remote Commander.**



2 **Insert the lithium battery with the positive (+) side facing upward.**

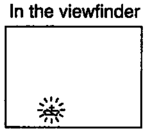


3 **Put the lithium battery holder back into the Remote Commander.**



To replace the lithium battery
Remove the lithium battery holder from the Remote Commander, and pull out the lithium battery, and insert a new one. **Replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**

Lithium battery life
The battery for the camcorder lasts for about 1 year, and the battery for the Remote Commander lasts for about 6 months under normal operation. When the lithium battery becomes weak, the ⚡ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA.



WARNING
Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

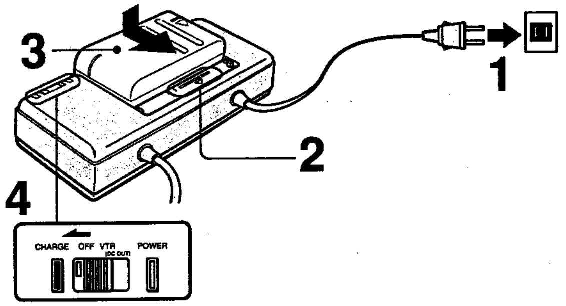
Caution
Keep the lithium battery out of the reach of children.
Should the battery be swallowed, consult a doctor immediately.

Charging and Installing the Battery Pack

Before you can use your camcorder, you first need to charge and install the battery pack.

Charging the Battery Pack

To charge the battery pack:



1 Plug the AC power adaptor into a wall outlet.

2 Align the right side of the battery pack with the line on the AC power adaptor.

3 Push down and slide the battery pack in the direction of the arrow.

4 Set the selector to "CHARGE" position.

When charging is finished, the charge lamp goes out.

Type of battery pack	NP-55 (supplied)	NP-77HD	NP-77H	NP-77	NP-66H	NP-55H
Required charging time	60	140	140	120	115	70
Battery life	60	140	140	120	115	70

(approx. minutes using AC-V35)

Important!

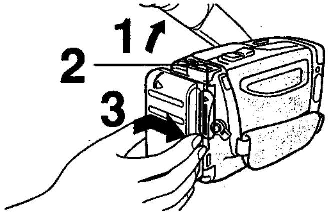
Use the battery completely before re-charging!

Before you recharge the battery, make sure the battery has been used (discharged) completely. Excessive charging may reduce the charging capacity of the battery.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ▭ indicator and a red lamp flash in the viewfinder.

Installing the Battery Pack

When you have finished charging the battery, install the battery pack as follows:



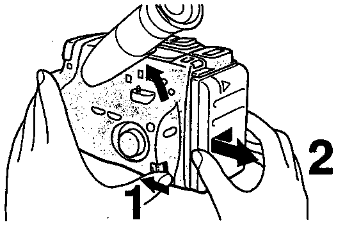
1 Lift up the viewfinder.

2 Align the right side of the battery pack with the white line on the camcorder.

3 Slide the battery pack to the right.

To remove the battery pack

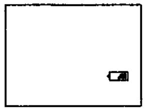
Lift up the viewfinder, and press BATT in the direction of arrow (1) and, at the same time, slide out the battery pack to the left (2).



Remaining battery indicator

You can check the remaining battery capacity with the remaining battery indicator in the viewfinder. The decreasing white bar indicates decreasing battery power.

In the viewfinder

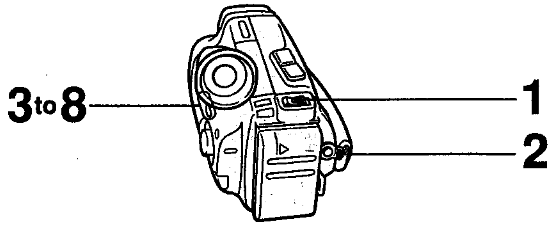


Note

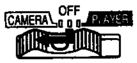
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack (not supplied). The indicator of NP-77HD is more accurate.

Setting the Date and Time

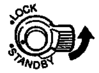
You need to set the camcorder's date and time to put the correct ones onto your video. Make sure that the power source and lithium battery are installed. Make settings looking at the viewfinder. About the world clock, see page 29.



1 While pressing the small green button on the POWER switch, slide it to CAMERA.

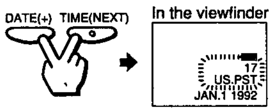

CAMERA
OFF
PLAYER

2 Turn the STANDBY switch up.


LOCK
STANDBY

3 Press DATE (+) and TIME (NEXT) simultaneously for at least 2 seconds until the area name and number appear in the viewfinder.

DATE now functions as + (to advance numbers) and TIME functions as NEXT (to set).


DATE(+)
TIME(NEXT)
In the viewfinder
17
US.PST
JAN.1 1992

4 Press DATE (+) to select your area name.

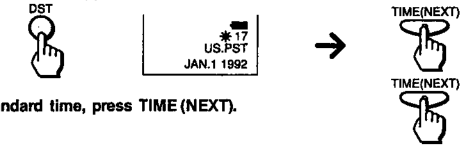
The time zones and area names are numbered as follows:

Time Zone	Area Name	Area Number
Hawaii Standard Time	HAWAII	15
Alaska Standard Time	ANCHRGE	16
Pacific Standard Time/West Canada	US. PST	17
Mountain Standard Time	US. MST	18
Central Standard Time	US. CST	19
Eastern Standard Time/East Canada	US. EST	20

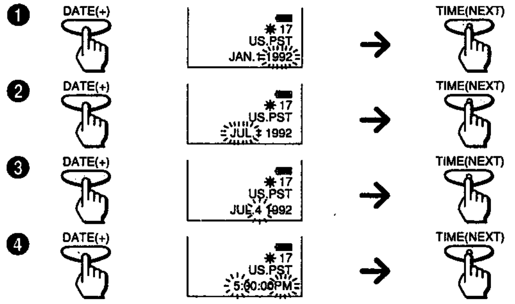
5 Choose one of the following options to set the clock:

(a) For Daylight Savings Time, press DST. Then press TIME (NEXT).
The ☀ indicator appears in the viewfinder.

(b) For standard time, press TIME (NEXT).

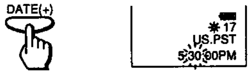

DST
☀17
US.PST
JAN.1 1992
TIME(NEXT)
TIME(NEXT)

6 Adjust the flashing digits of the year, month, day and hour by pressing DATE (+) and TIME (NEXT).


❶
DATE(+)
☀17
US.PST
JAN.1 1992
TIME(NEXT)
❷
DATE(+)
☀17
US.PST
JUL.1 1992
TIME(NEXT)
❸
DATE(+)
☀17
US.PST
JUL.4 1992
TIME(NEXT)
❹
DATE(+)
☀17
US.PST
5:00:00PM
TIME(NEXT)

Note:
When you keep DATE (+) depressed, the digits advance faster.

7 Adjust the flashing digits of minute by pressing DATE (+).


DATE(+)
☀17
US.PST
5:30:00PM

8 Press TIME (NEXT).
The clock starts working.

To correct the date and time settings
Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat steps 3 to 8.

To check the preset date and time
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

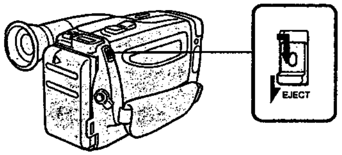
To reset to standard time
Press DST. The ☀ indicator goes off.

Inserting a Cassette

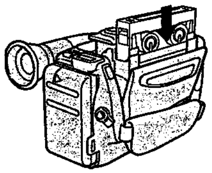
This section shows you how to insert a cassette.
Make sure that the power source is attached before you insert a cassette.

1 **While pressing the small blue button on the EJECT knob, slide it down.**

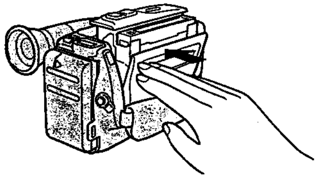
The cassette compartment automatically lifts up and opens toward you.



2 **Insert a tape with the window facing out.**

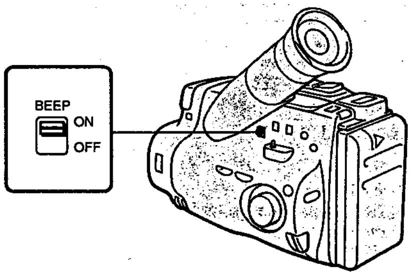


3 **Close the cassette holder by pressing the "PUSH" mark on the cassette holder.**



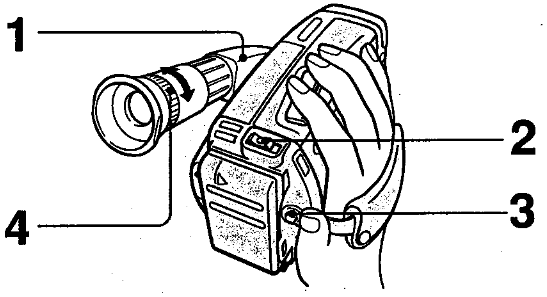
Checking the BEEP Switch

A beep sounds when you start recording and two beeps sound when you stop recording, confirming the operation.
Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape.
If you do not want to hear the beep sound, set the BEEP switch to OFF.

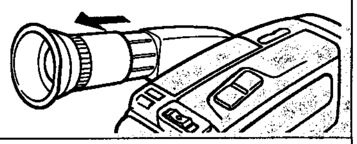


Adjusting the Viewfinder Lens

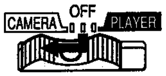
Before you use the camcorder for the first time (or after someone else has used it), adjust the viewfinder lens to best fit your eyesight. Make sure that the power source is attached to the camcorder, and a cassette is inserted.



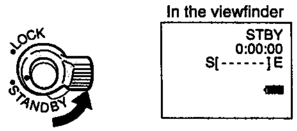
1 **Pull out the viewfinder until it clicks.**



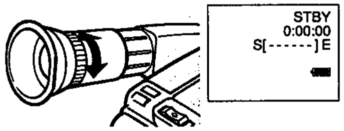
2 **While pressing the small green button on the POWER switch, slide it to CAMERA.**



3 **Turn the STANDBY switch up.**

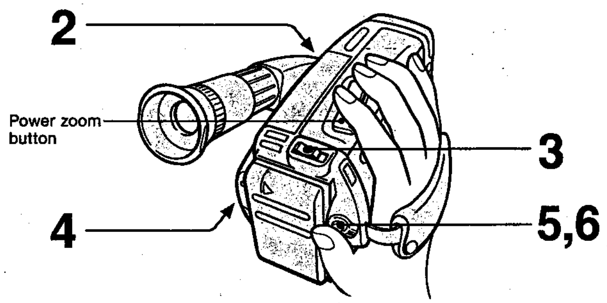


4 **Turn the viewfinder lens adjustment ring so that the "STBY" indicator in the viewfinder screen comes into sharp focus.**



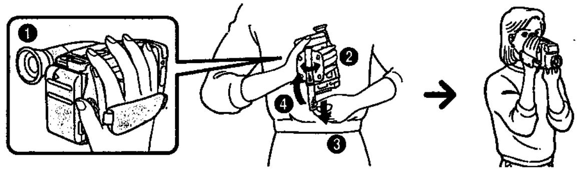
Camera Recording

This section describes the basic procedures for recording.
Make sure that the viewfinder is pulled out and a battery pack (see page 9) or other power sources (see page 24) are attached. If you set the date (page 10), the date is automatically recorded for 10 seconds after you start recording (Auto Date feature). This feature works only once a day.
If you set the BEEP switch to ON, beeps sound when you start/stop recording or when you make a mistake in operation.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly.



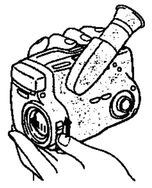
1 **Hold the camcorder as described below.**

Put your hand through the grip strap, hold your camcorder against your body and pull the strap upward. Check that your thumb can easily touch START/STOP.

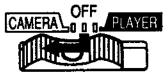


2 **Slide the LENS COVER switch to OPEN.**

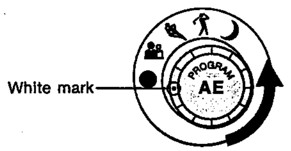
Note that the camcorder doesn't start recording while the lens cover is closed.



3 **While pressing the small green button on the POWER switch, slide it to CAMERA.**

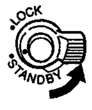


4 **Set the white mark of the PROGRAM AE dial to the green position.**



5 **Turn the STANDBY switch up.**

"STBY", the remaining tape length and remaining battery indicators appear in the viewfinder. Now you can see through the viewfinder.

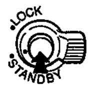


In the viewfinder

STBY
0:00:00
S[------]E
AUTO DATE

6 **Press START/STOP once.**

The camcorder is recording when the "REC" indicator appears and the red lamp lights up in the viewfinder.



REC
0:00:00
S[------]E
JUL 4 1992

Red lamp——▶ ●

In the viewfinder, you can see a black and white picture of what you are recording and information that indicates what the camcorder is doing.

To stop recording momentarily
Press START/STOP again.
"STBY" indicator appears in the viewfinder.

To finish recording
Turn STANDBY down and slide the POWER switch to OFF. Close the lens cover.

Ejecting the tape
1 While pressing the small blue button on the EJECT knob, slide the knob down.
2 Take out the tape.
3 Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

To reset the counter to 0:00:00
Press COUNTER RESET.

To check the remaining tape length during recording
In recording mode, the remaining tape length indicator appears in the viewfinder. The remaining tape length indicator changes as follows.

S[------]E ---▶ S[▬▬▬]E ---▶ S[▬]E ——▶ 5min ——▶ 4min ---▶ 0min ——▶ 0min

When you shoot a subject within 80 cm (31 1/2 inches) of the lens using telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus becomes sharp.

Note on the auto date feature
The auto date feature works once a day. However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.

Camera Recording

Near the end of the tape
The ▭ indicator, the red lamp in the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

Caution!
Please remember that you can only use 8 mm format video cassettes with this camcorder, and that it is not possible to use PCM recording/playback function available on some 8 mm recorders. The PCM sound recorded or after-recoded with another recorder cannot be played back with this camcorder.
You can record tapes in SP (standard play) mode only, and play back tapes in both SP and LP (long play) modes.

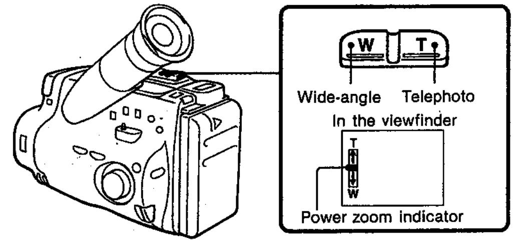
If you wear glasses
You can bend back the eyecup to get a better view of the viewfider.

Notes on recording
- When you record from the beginning of the tape, run the tape for about 15 seconds before the actual recording. This will ensure that you won't miss any start up scenes when the tape is played back.
- When moving from indoors to outdoors, or vice versa, turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

If you leave the camcorder in standby mode for 5 minutes or more
The camcorder goes off automatically. To re-enter standby mode, turn the STANDBY switch down once and turn it up again. To start recording, press START/STOP directly.

Using the Zooming Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. Use "Zoom-in (telephoto)" for dramatic close-ups, and "zoom-out (wide-angle)" for panoramic long shots. You can also use zooming to focus manually or to decide on a shooting angle. For more professional-looking recordings, use zooming sparingly.



Dual Speed Zooming

The camcorder's power zoom button offers dual speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.
Press the T side of the power zoom button for telephoto (subject appears closer) and the W side for wide-angle (subject appears farther away).

Close-up (Macro)

Even small subjects such as flowers, insects, and images in photographs, can literally fill the screen using autofocus in macro.

1 **Bring the camcorder as close as necessary to obtain the desired subject size.**
2 **Press the W side of the power zoom button until the indicator in the viewfinder stops at the W end.**

Manual focusing in Macro
You can also shoot with manual focus while doing close-up.
For details of manual focusing, see page 31.

Note
You can shoot a subject that is at least 80 cm (about 31 1/2 inches) away from the lens surface in the telephoto position.

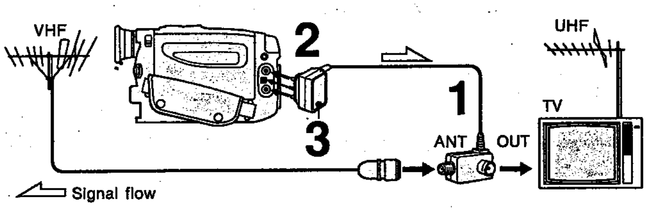
Playing Back a Tape

You can use this camcorder to function as a VCR by connecting it directly to your TV for playback.

There are several ways to connect the camcorder to your TV. First check if your TV has video/audio inputs. If it does, see page 35. You can also monitor the playback picture in the viewfinder while the camcorder is connected to your TV.

If Your TV Has Only an Antenna Input

Use the supplied RFU adaptor to connect your camcorder to the TV. Make sure that the TV is turned off to prevent speaker damage before hooking up to your camcorder.

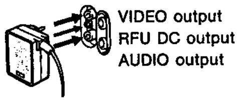


To connect your camcorder to a TV that already has a regular TV (VHF) antenna attached, you need to:

1 **Unplug the antenna cable from the TV.**

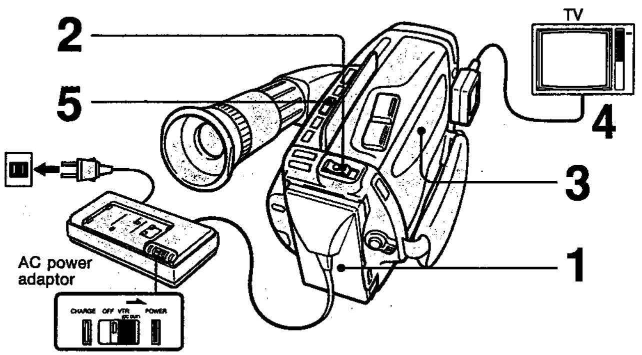
Plug in the end of the RFU adaptor marked OUT into the antenna input of your TV. Re-wire the antenna cable you unplugged to the RFU adaptor jack marked ANT. This way, you can switch between TV broadcasts and your home video playback without re-wiring.

2 **Connect the RFU adaptor to the camcorder.**



3 **Set the channel selector on the RFU adaptor (and your TV channel) to 3CH or 4CH of the VHF channel, whichever is not active (vacant) in your area.**

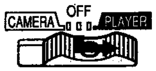
Playing Back a Tape



1 **Attach the connecting plate of the AC power adaptor to the camcorder and connect the AC power adaptor to a wall outlet.**

Then set the selector to "VTR (DC OUT)" position.

2 **While pressing the small green button on the POWER switch, slide it to PLAYER.**



3 **Insert a tape.**

4 **Set the TV/VCR selector on the TV to VCR.**

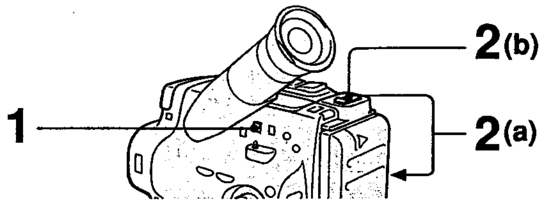
5 **Press ▷ (PLAY).**
Playback starts.

To stop playback, press □ (STOP).
To rewind the tape, press ◀◀ (REW).
To fast forward the tape, press ▶▶ (FF).

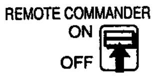
When you have finished playback
1 Slide the POWER switch to OFF.
2 Disconnect the AC power adaptor from the wall outlet.

Using the Remote Commander

You can use the Remote Commander to record yourself with your friends or family, or conveniently control the playback of your tape from a distance. Before you use the Remote Commander, insert a supplied lithium battery into it (see page 7) and turn on the POWER switch on the camcorder.



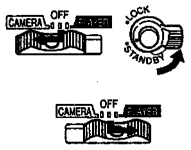
1 **Set the REMOTE COMMANDER ON/OFF switch on the camcorder to ON.**



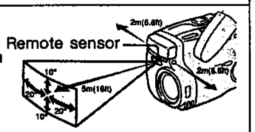
2 **Set the POWER switch on the camcorder as follows:**

(a) When recording, 1) while pressing the small green button on the POWER switch, slide it to CAMERA, 2) turn STANDBY up.

(b) When playing back, while pressing the small green button on the POWER switch, slide it to PLAYER.



3 **Aim the Remote Commander at the remote sensor on the camcorder and press the appropriate button on the Remote Commander.**



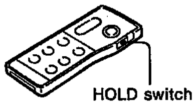
(Maximum distance and angle for remote control)

Note

The buttons that have the same name on the Remote Commander and on the camcorder function equally.

To prevent misoperation

When you slide the HOLD switch in the direction of the arrow, none of the buttons on the Remote Commander will work. Use this to prevent any misoperation, such as accidentally pressing a button.

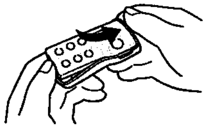


Notes on the Remote Commander operation

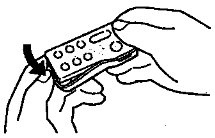
- Make sure that the remote sensor is not in sunlight or strong light. In that case, you may not be able to operate with the Remote Commander.
- This camcorder works through the signals of the commander mode "VTR 2". A commander mode is used to distinguish this camcorder from other Sony VCRs to avoid misoperation. If you use another Sony VCR at commander mode "VTR2", we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.
- Be sure that there are no obstructions between the Remote Commander and the camcorder.

Using the Remote Commander holder

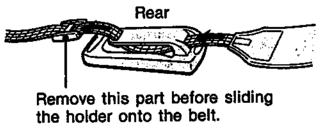
You can clip the Remote Commander holder on your coat pocket or belt, or slide it onto the shoulder belt before attaching the Remote Commander to it.



To remove the Remote Commander from the holder



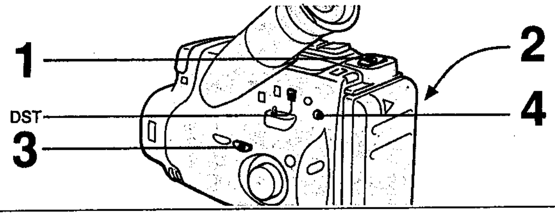
To attach the holder to the shoulder belt



Remove this part before sliding the holder onto the belt.

Using the World Clock

You can reset the clock according to your time zone only by pressing the AREA button. Before using the world clock, set the date and time (see page 10).



1 While pressing the small green button on the POWER switch, slide it to CAMERA.

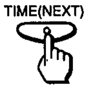
CAMERA
OFF
PLAYER

2 Turn STANDBY up.

LOCK
STANDBY

3 Press TIME (NEXT).

The "date and time settings" appear.



In the viewfinder

2:00:15 PM

4 Press AREA until your time zone's name and number appear.

An area name appears in the viewfinder. You can find the area name and the number in the "Time zone chart" on the next page.

1
LONDON
10:00:15 PM

To check the date

Press DATE (+).
To turn off the date indicator, press DATE (+) again.

To adjust to daylight savings time

Press DST.
The time changes to daylight savings time.
To reset to standard time, press DST again.

In the viewfinder

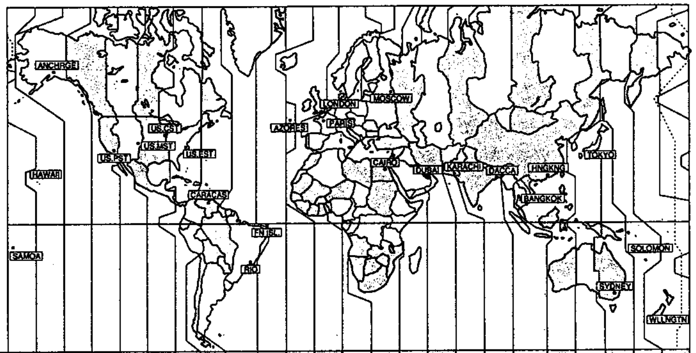
✱
11:00:15 PM

To re-set to your home area time again

Press AREA until your home area name appears.

Using the World Clock

Time zone chart



Area number	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13

Area number	Area name	Nations or area*
1	LONDON	England, GMT (Greenwich Mean Time), Portugal
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland
3	CAIRO	Egypt, Greece, Israel, Turkey
4	MOSCOW	Iraq, Kenya, Saudi Arabia, former Soviet Union (west)
5	DUBAI	United Arab Emirates
6	KARACHI	Moldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (west), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (east), Guam, Saipan
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	HST (Hawaii standard time), Tahiti
16	ANCHRGE	AST (Alaska standard time)
17	US. PST	PST (Pacific standard time)
18	US. MST	MST (Mountain standard time)
19	US. CST	CST (Central standard time), Mexico
20	US. EST	EST (East standard time), Peru
21	CARACAS	Chile, Venezuela
22	RIO	Argentina, Brazil
23	FN ISL.	Fernando de Noronha
24	AZORES	Azores Islands

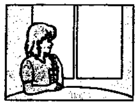
* These are common names. They may be different from formal country names.

Focusing Manually

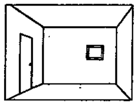
When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.

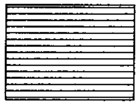
[a]



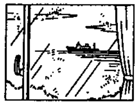
[b]



[c]



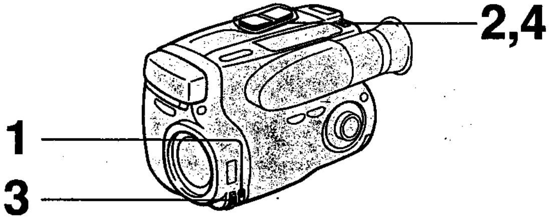
[d]



[a] to [d] correspond to the illustrations above.
- Too much brightness behind the subject [a]
- Subjects with little contrast – walls, sky, etc. [b]
- Horizontal stripes [c]
- Subject through frosted glass [d]
- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be focused)
- When using conversion lenses or effect filters
- When shooting a stationary subject using tripod
- When you want to save battery power

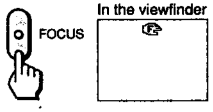
Focusing Manually

When adjusting the focus manually, the best way is to first adjust at telephoto position before recording, then set the desired zoom angle.

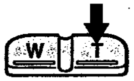


1 **Press FOCUS.**

The (manual focusing) indicator appears in the viewfinder.

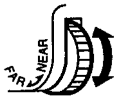


2 **Keep pressing the T (telephoto) side of the power zoom button until the zooming stops.**



3 **Turn the focus dial to achieve sharp focus.**

The focus dial does not have a stop position.



4 **Set the desired shot length using the power zoom button.**

To reactivate autofocusing

Press FOCUS until the indicator in the viewfinder disappears.

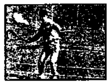
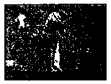
Shooting in relatively dark places

When shooting in relatively dark places such as indoors, the depth of field (distance range of the subject that will be in sharp focus) is very shallow. For best results, shoot at wide angle after focusing in the telephoto position.

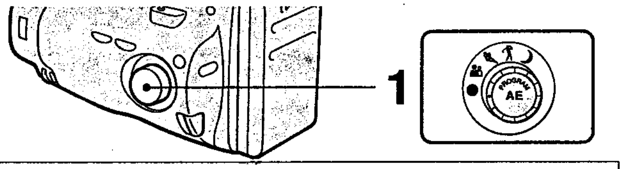
Using the PROGRAM AE Function

When you use the PROGRAM AE (Auto Exposure) function, you can give a "portrait" effect (the object is in focus and the background is out of focus), or capture high-speed action with "sports" mode or "high speed shutter" mode. When you record fireworks or neon signs, use "twilight" mode. Select from four types of mode referring to the following table.

To choose the best programmed AE mode

When shooting:	Select:	In the viewfinder
• A still subject such as a person or a flower • Zooming in a subject in the telephoto mode • A subject behind such obstacle as a net	(Portrait mode)	
• Outdoor sports scene such as football, tennis or golf • A landscape in a moving car	(Sports mode)	
• A golf swing or a tennis match with the tennis ball captured clearly • Playing back certain scenes with high speed movements in a clear, sharp picture	(High speed shutter mode)	
• Recording a night view, neon signs, or fireworks	(Twilight mode)	

Selecting the PROGRAM AE Mode



1 Set the white mark of the PROGRAM AE dial to the desired PROGRAM AE mode.
The indicator of the selected PROGRAM AE mode appears in the viewfinder.
As you turn the dial, the indicator changes as follows:

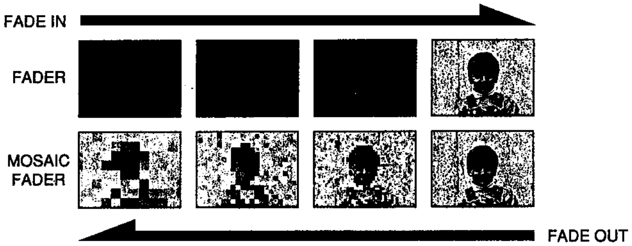
No indicator → (Portrait mode) → (Sports mode) → (High-speed shutter mode) → (Twilight mode)
↑____|

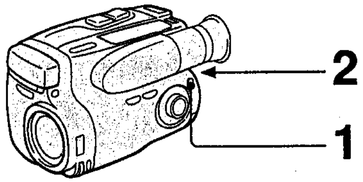
Note

The shutter speed in each RPOGRAM AE mode is as follows:
Portrait mode – between 1/60 to 1/2000
Sports mode – between 1/60 to 1/500
High-speed shutter mode – 1/4000
Twilight mode – 1/60

Fade-in and Fade-out

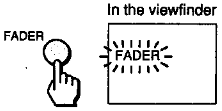
You can fade a picture in or out with sound to give your recording a professional touch. When fading-in, you can make the picture gradually appear from black or mosaic while increasing the sound. When fading-out, you can make the picture gradually fade to black or mosaic while decreasing the sound.





1 Select the type of fade by pressing FADER as follows:

(a) When fading-in, press it after turning the STANDBY switch up to put the camcorder into standby mode. The fade indicator starts flashing.
(b) When fading-out, press it while recording.
The fade indicator starts flashing.



Note on the FADER button
Each time you press FADER,
the indicator changes as follows:

No indicator → FADER (black fade)
↑ ↓
M. FADER (mosaic fade)

2 Press START/STOP.

LOCK
STANDBY

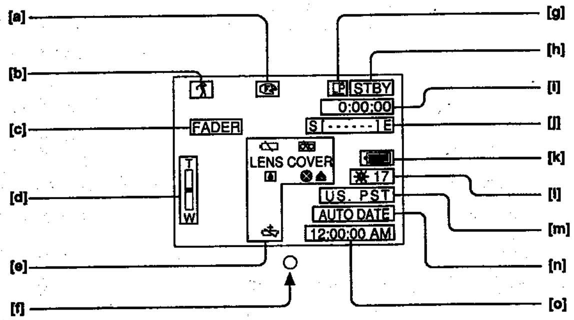
When fading-in, the fade indicator stops flashing and the recording starts fading in.
When fading-out, the fade indicator stops flashing, the picture fades out, and then recording stops.

To cancel the fade-in/fade-out function
Before pressing START/STOP, press FADER so that the fade indicator disappears.

Indicators in the Viewfinder

Operation Indicators

For details on each indicator, refer to the pages idicated in the parenthesis.

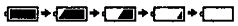
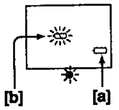
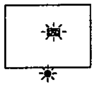
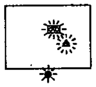
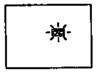
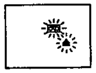
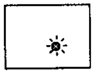
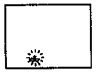


[a] Manual focusing (F) (32)
[b] PROGRAM AE indicator (33)
[c] FADER has been pressed. (34)
[d] Power zoom indicator (17)
[e] Warning indicators (51)
[f] Lights up during recording.
When flashing: "Change battery or cassette"

[g] Lights up when playing back a tape recorded in LP mode (40)
[h] Tape transport mode (15), (19), (37)
[i] Tape counter
[j] Remaining tape length indicator (15), (37)
[k] Remaining battery indicator (9), (51)
[l] Area number (10), (29)
[m] Area name (10), (29)
[n] Auto date (15)
[o] Date or Time (10), (26)

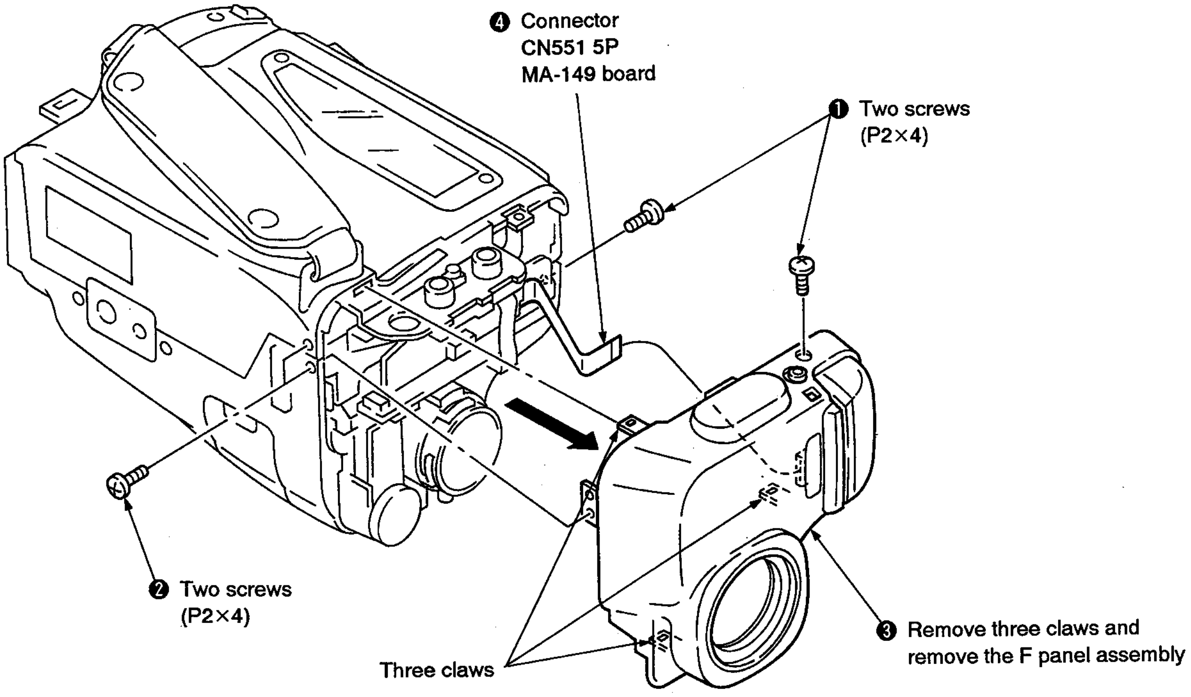
Warning Indicators

If indicators flash in the viewfinder or a caution lamp on the camcorder flashes, check the following:

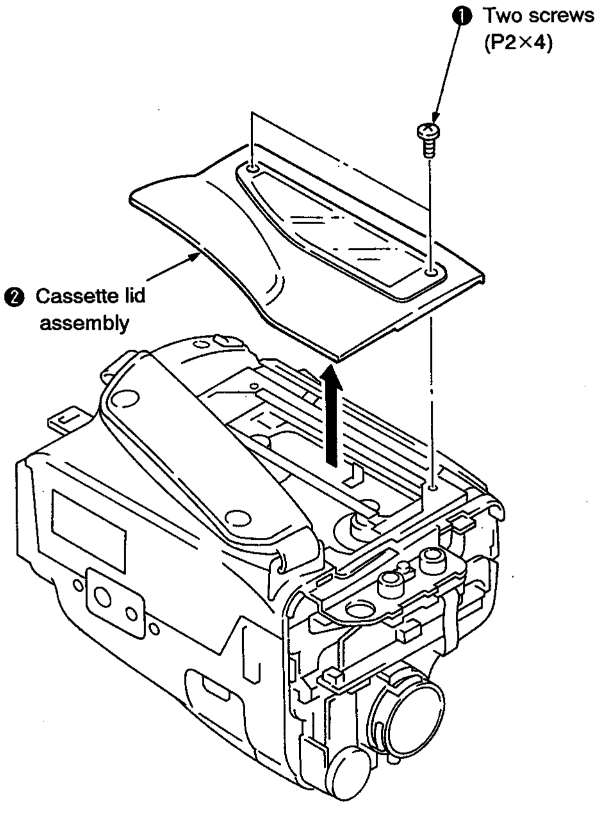
	In the viewfinder
[a] Remaining battery indicator  [b] Battery lamp Slow flashing: The battery is weak. Fast flashing: The battery is dead.	
The tape is near the end.	
The tape has run out.	
No tape has been inserted.	
The tab on the tape is out (red).	
Moisture condensation has occurred.	
The video heads may be contaminated.	
Some other trouble has occured. Disconnect the power source and contact your Sony dealer or local authorized facility.	
The lithium battery is weak.	
The LENS COVER switch is set to CLOSE.	

SECTION 2
DISASSEMBLY

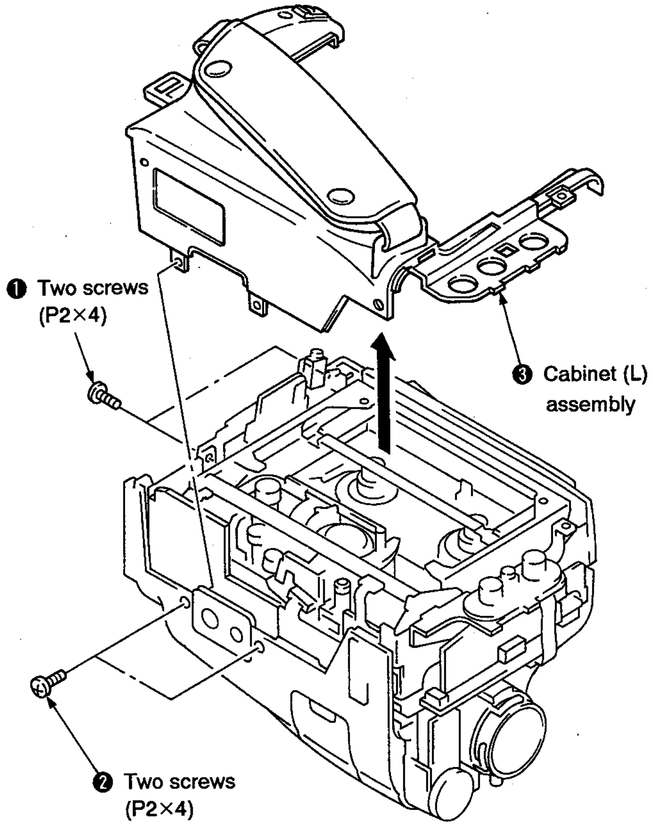
2-1. REMOVAL OF F PANEL ASSEMBLY


❹ Connector
CN551 5P
MA-149 board
❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
Three claws
❸ Remove three claws and
remove the F panel assembly

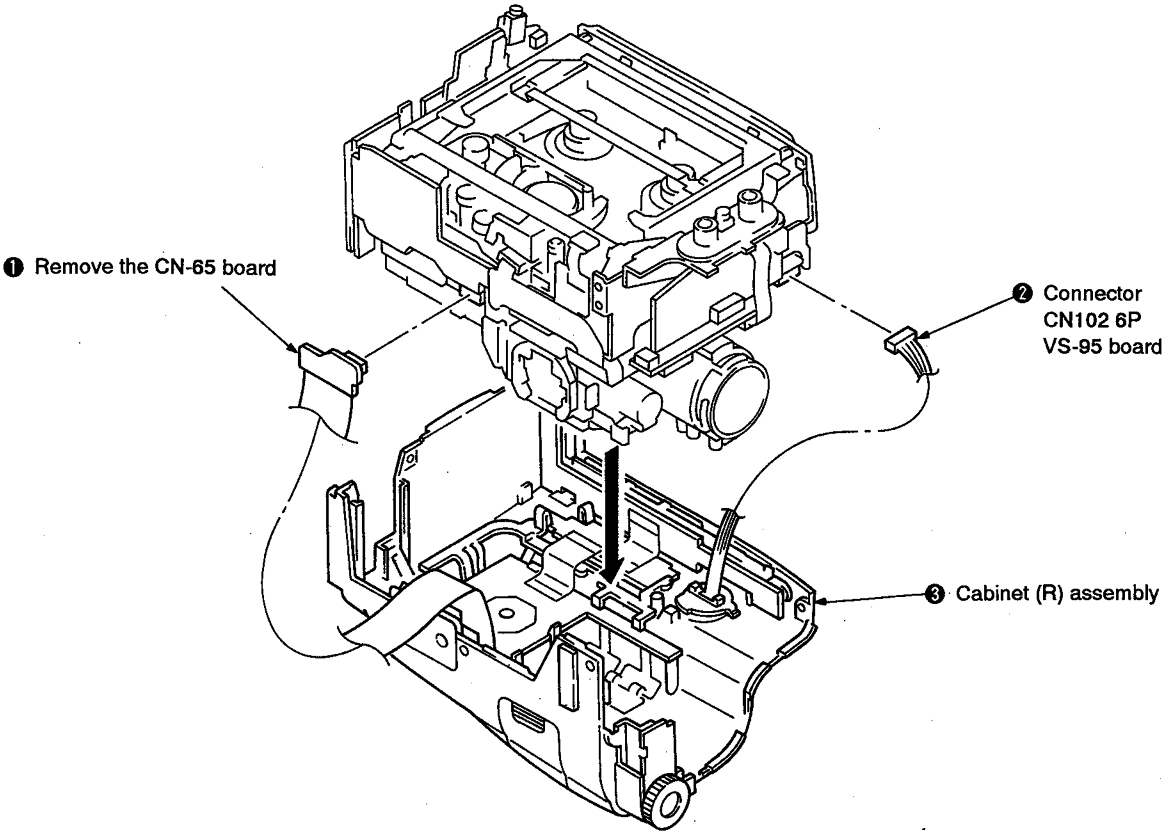
2-2. REMOVAL OF CASSETTE LID ASSEMBLY


❶ Two screws
(P2×4)
❷ Cassette lid
assembly

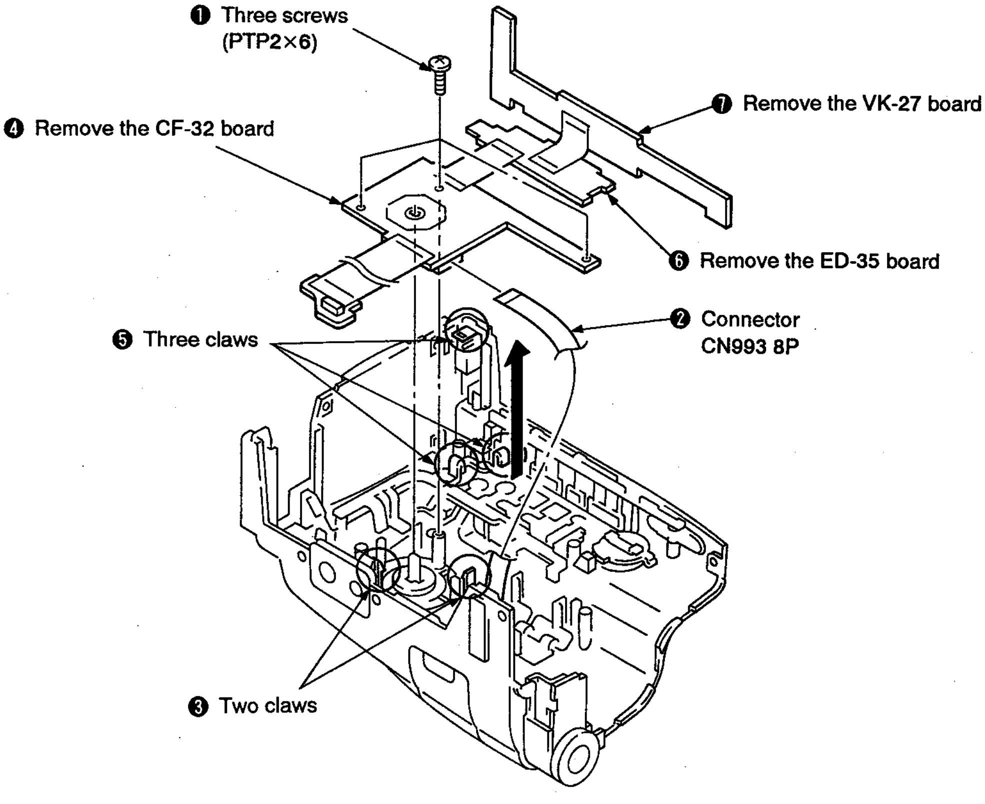
2-3. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws
(P2×4)
❸ Cabinet (L)
assembly
❷ Two screws
(P2×4)

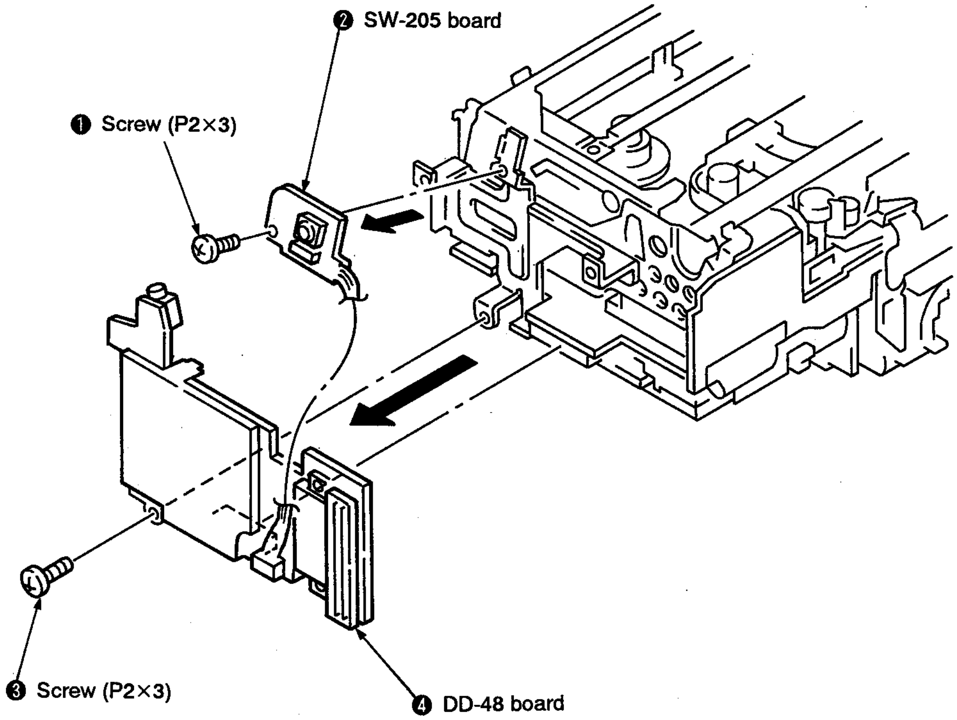
2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Remove the CN-65 board
❷ Connector
CN102 6P
VS-95 board
❸ Cabinet (R) assembly

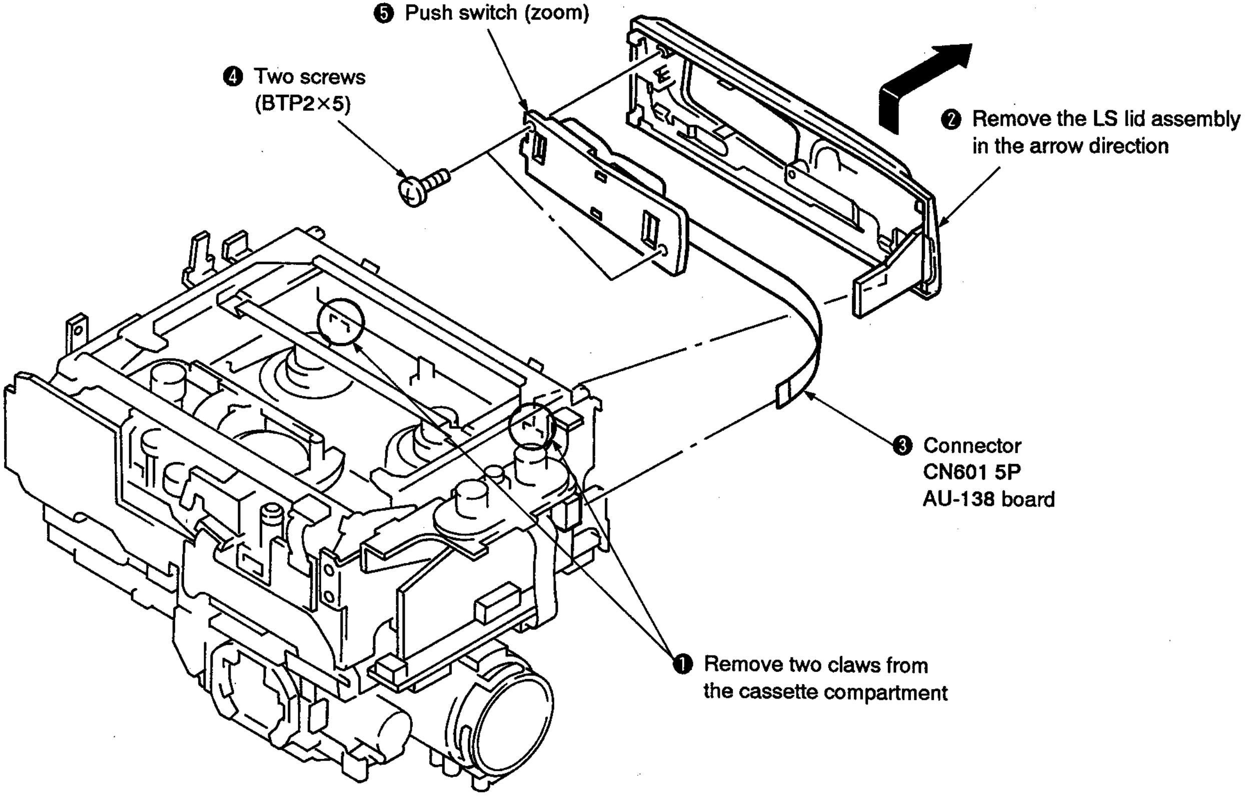
2-5. REMOVAL OF CF-32, ED-35 AND VK-27 BOARDS


❶ Three screws
(PTP2×6)
❼ Remove the VK-27 board
❹ Remove the CF-32 board
❻ Remove the ED-35 board
❷ Connector
CN993 8P
❺ Three claws
❸ Two claws

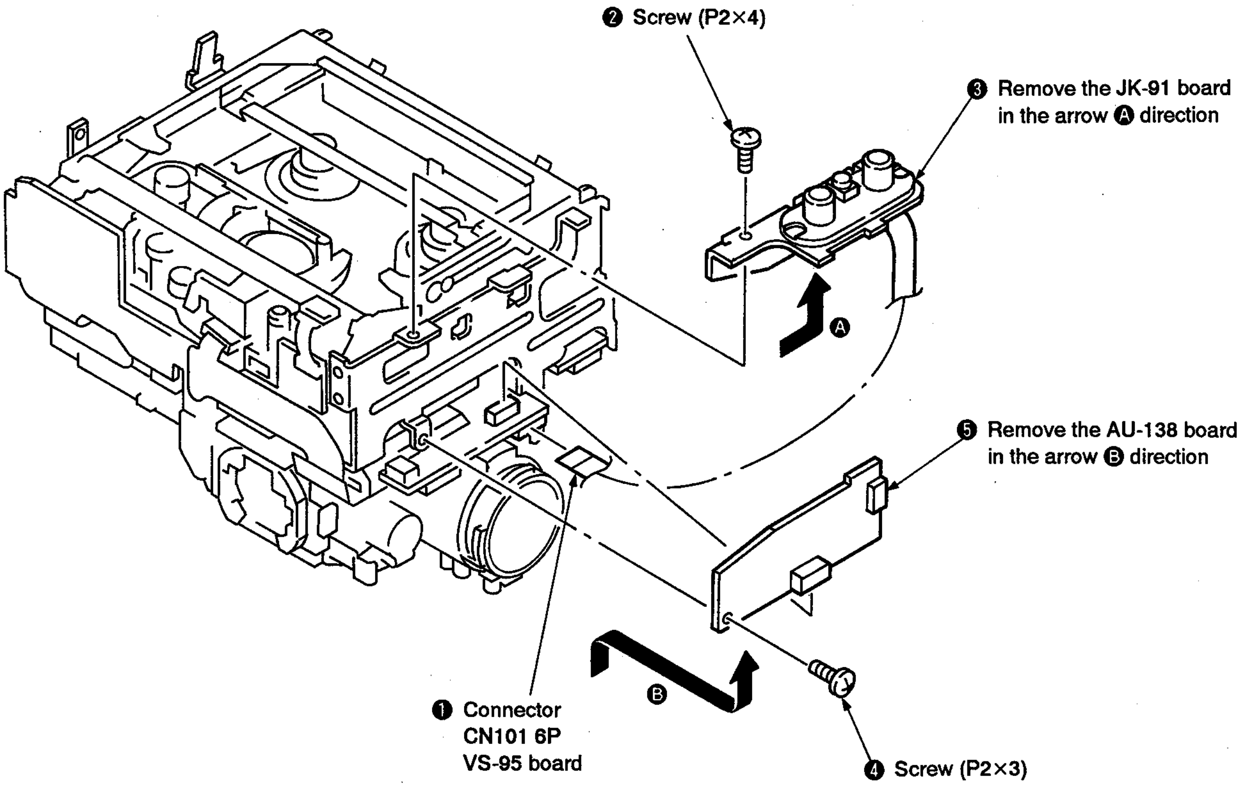
2-6. REMOVAL OF DD-48 AND SW-205 BOARDS


❷ SW-205 board
❶ Screw (P2×3)
❸ Screw (P2×3)
❹ DD-48 board

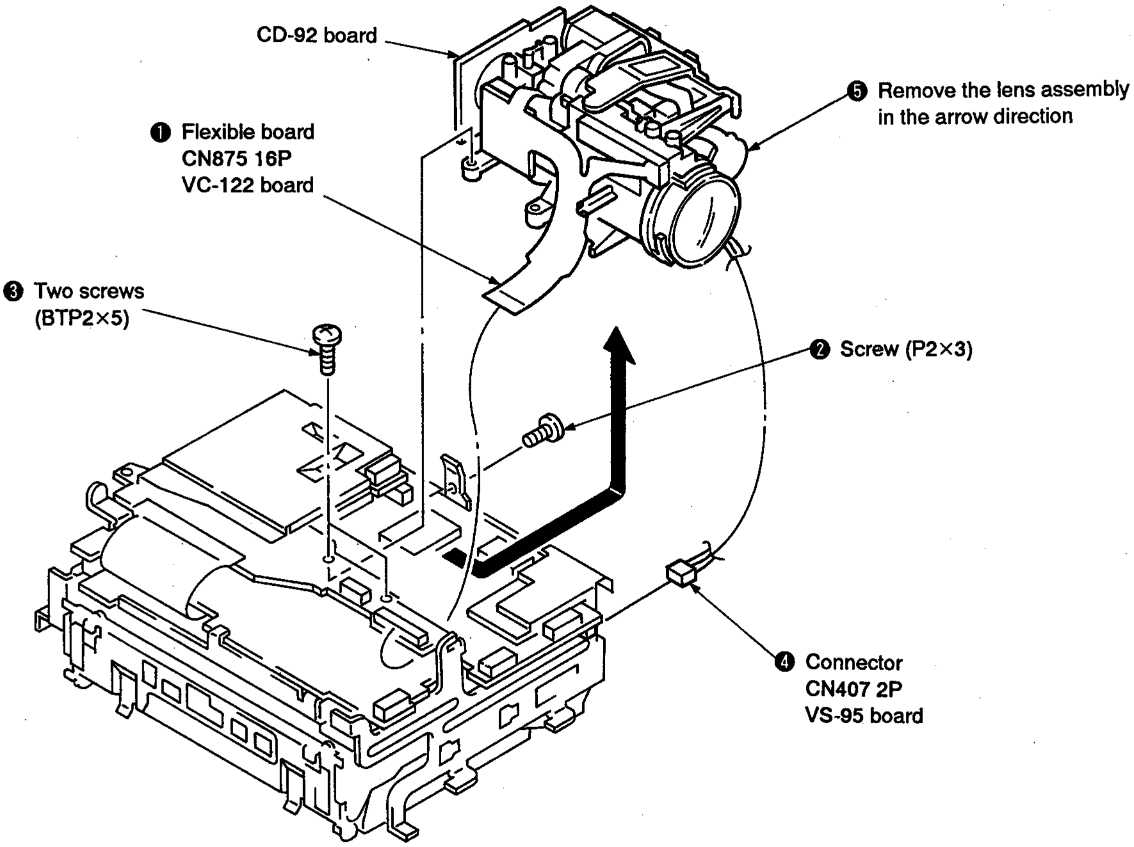
2-7. REMOVAL OF LS LID ASSEMBLY


❺ Push switch (zoom)
❹ Two screws
(BTP2×5)
❷ Remove the LS lid assembly
in the arrow direction
❸ Connector
CN601 5P
AU-138 board
❶ Remove two claws from
the cassette compartment

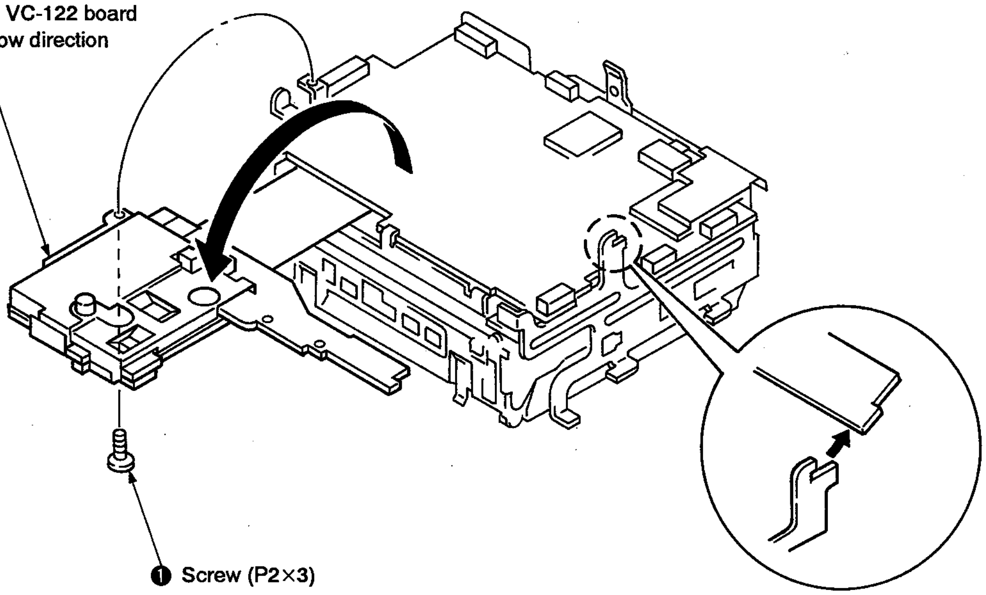
2-8. REMOVAL OF JK-91 AND AU-138 BOARDS


❷ Screw (P2×4)
❸ Remove the JK-91 board in the arrow Ⓐ direction
Ⓐ
❺ Remove the AU-138 board in the arrow Ⓑ direction
Ⓑ
❶ Connector CN101 6P VS-95 board
❹ Screw (P2×3)

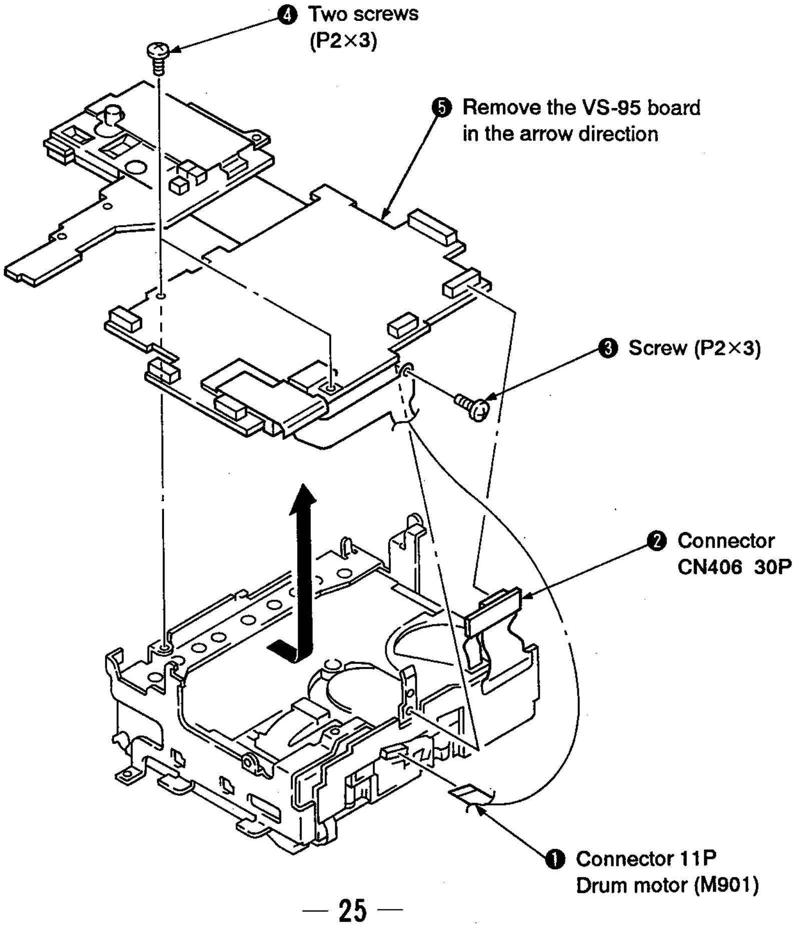
2-9. REMOVAL OF LENS ASSEMBLY (CD-92 BOARD)


CD-92 board
❶ Flexible board CN875 16P VC-122 board
❺ Remove the lens assembly in the arrow direction
❸ Two screws (BTP2×5)
❷ Screw (P2×3)
❹ Connector CN407 2P VS-95 board

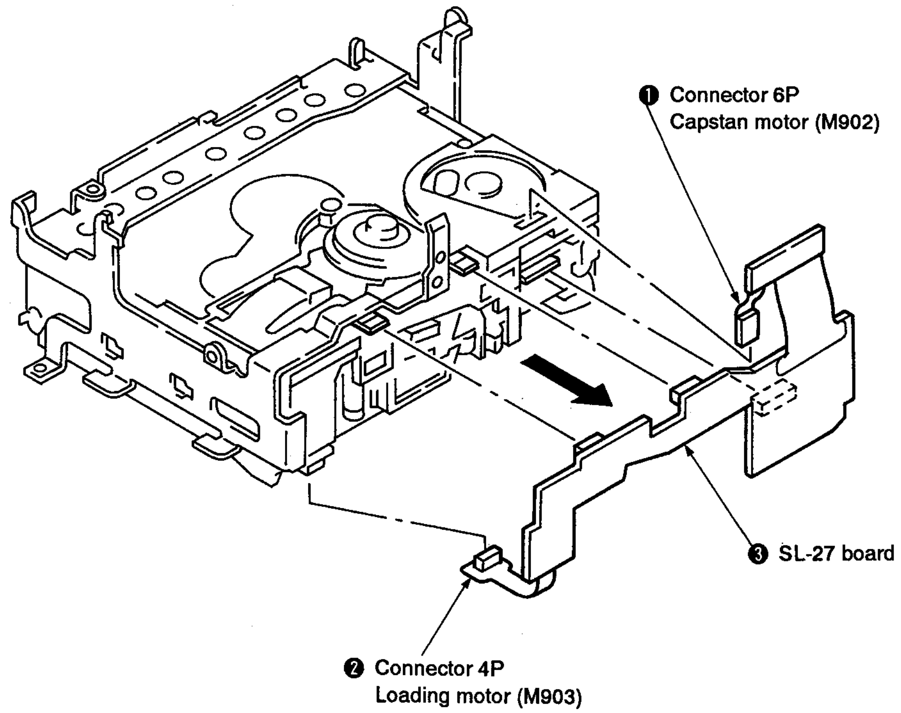
2-10. OPENING OF VC-122 BOARD


❸ Open the VC-122 board
in the arrow direction
❶ Screw (P2×3)
❷ Remove the VC-122 board by
removing claw of frame (Lower)

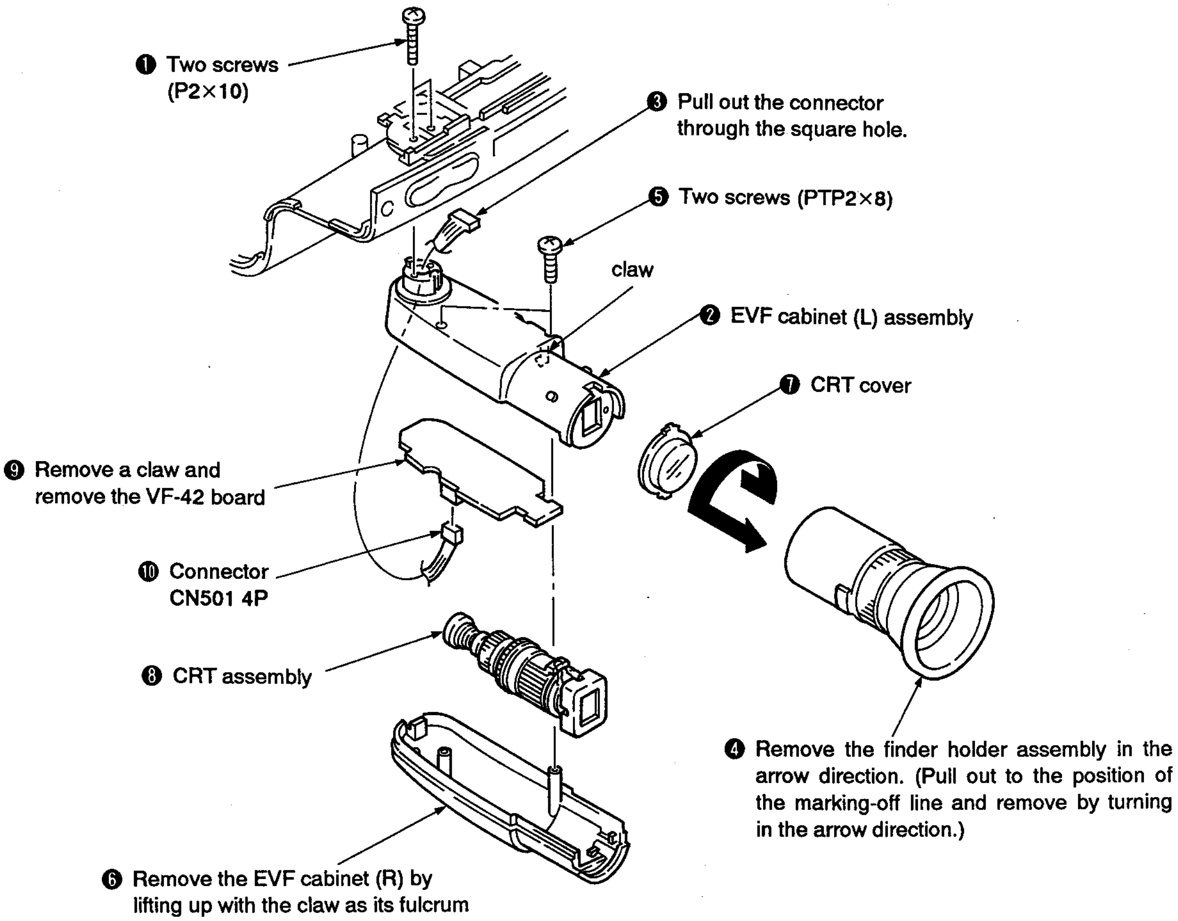
2-11. REMOVAL OF VS-95 BOARD


❹ Two screws
(P2×3)
❺ Remove the VS-95 board
in the arrow direction
❸ Screw (P2×3)
❷ Connector
CN406 30P
❶ Connector 11P
Drum motor (M901)

2-12. REMOVAL OF SL-27 BOARD

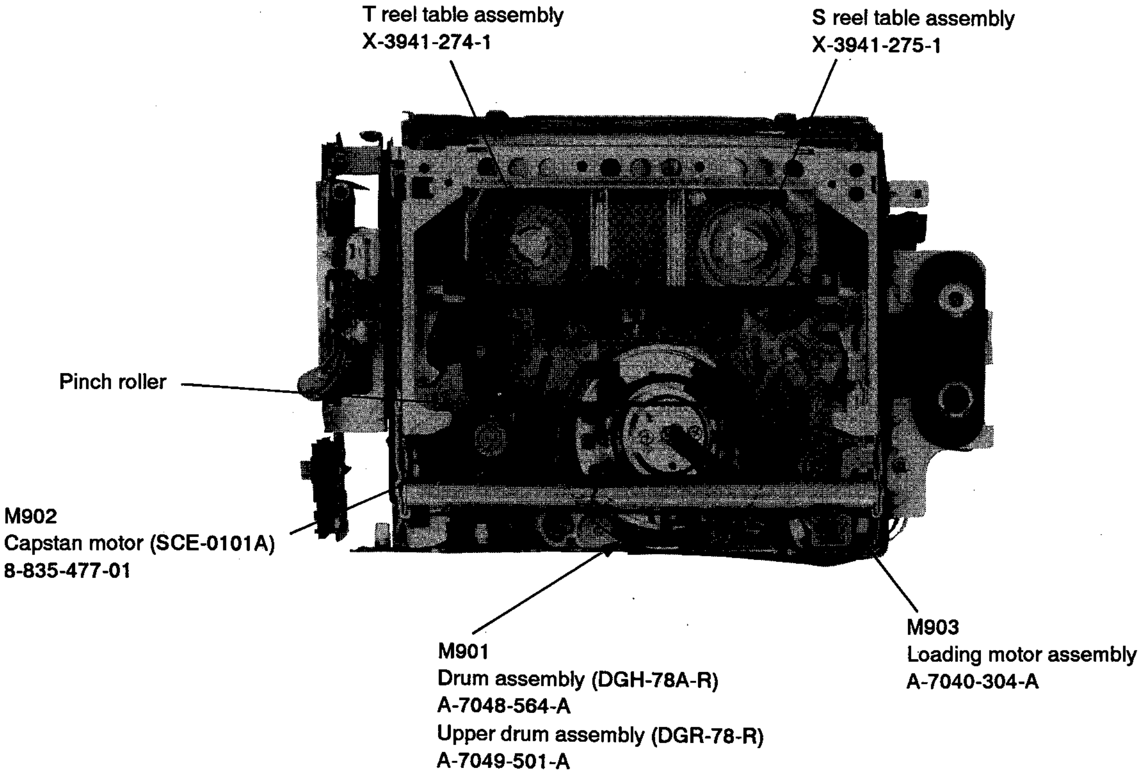

❶ Connector 6P
Capstan motor (M902)
❸ SL-27 board
❷ Connector 4P
Loading motor (M903)

2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)

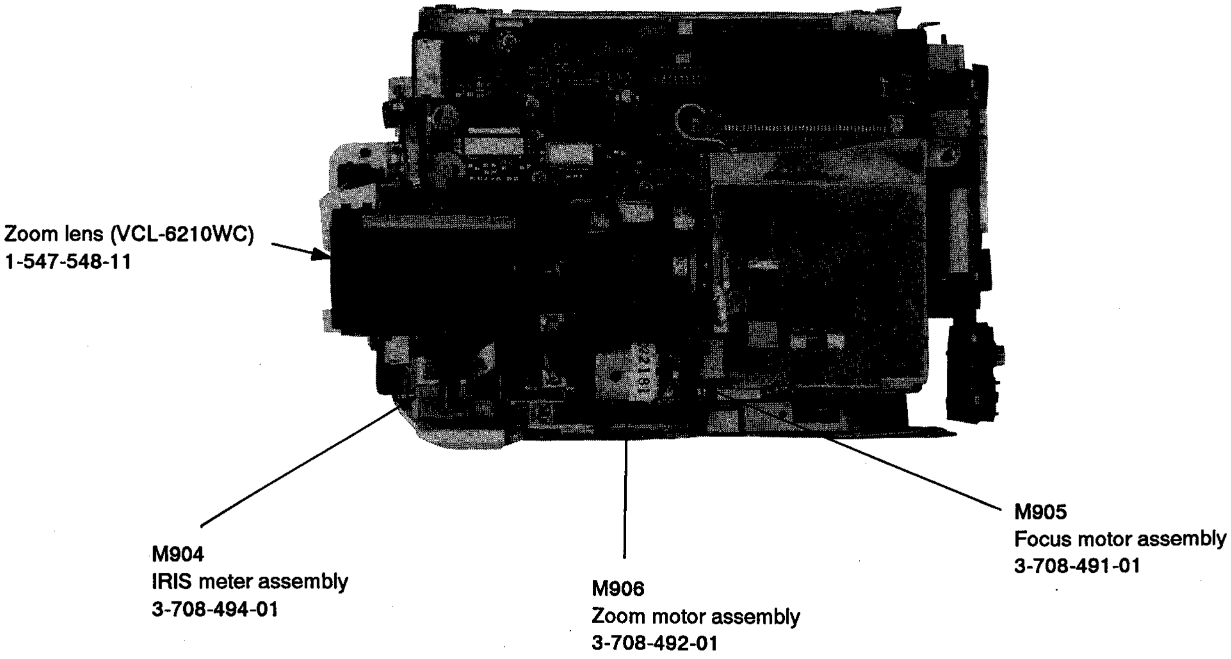

❶ Two screws
(P2×10)
❸ Pull out the connector
through the square hole.
❺ Two screws (PTP2×8)
claw
❷ EVF cabinet (L) assembly
❼ CRT cover
❾ Remove a claw and
remove the VF-42 board
❿ Connector
CN501 4P
❽ CRT assembly
❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)
❻ Remove the EVF cabinet (R) by
lifting up with the claw as its fulcrum

2-14. INTERNAL VIEWS

— Left side —

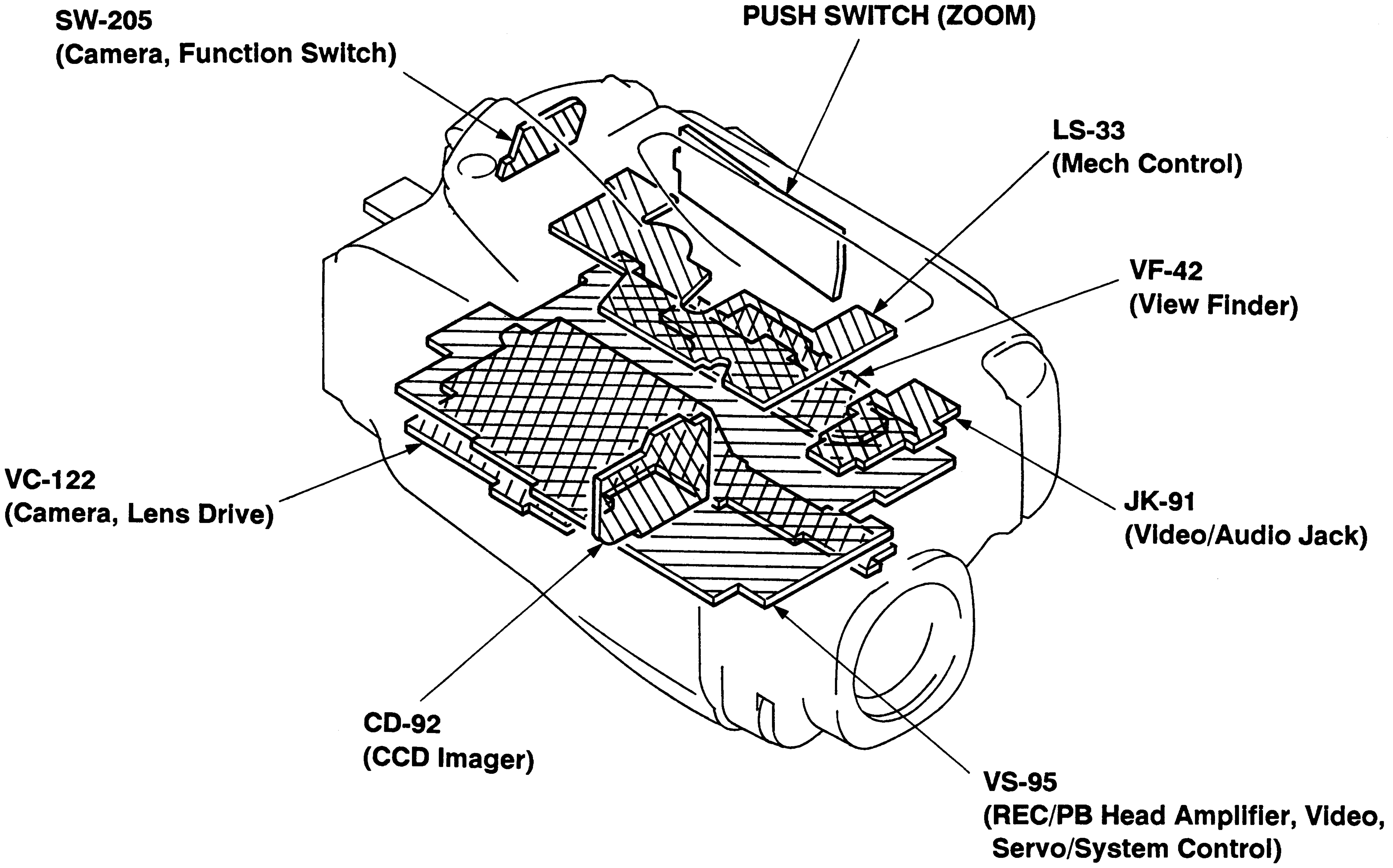

T reel table assembly
X-3941-274-1
S reel table assembly
X-3941-275-1
Pinch roller
M902
Capstan motor (SCE-0101A)
8-835-477-01
M901
Drum assembly (DGH-78A-R)
A-7048-564-A
Upper drum assembly (DGR-78-R)
A-7049-501-A
M903
Loading motor assembly
A-7040-304-A

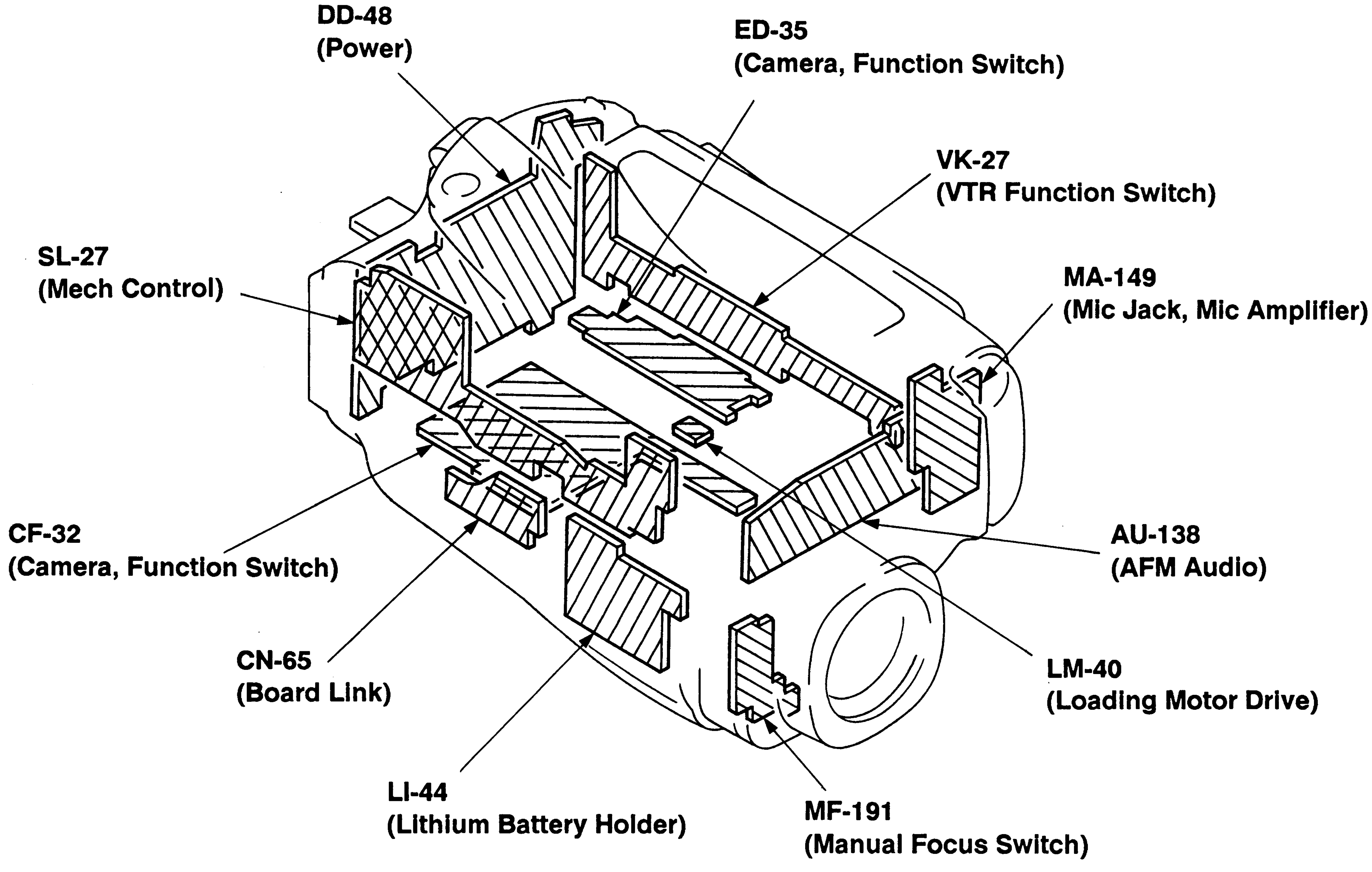
— Right side —


Zoom lens (VCL-6210WC)
1-547-548-11
M904
IRIS meter assembly
3-708-494-01
M906
Zoom motor assembly
3-708-492-01
M905
Focus motor assembly
3-708-491-01

SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION


SW-205
(Camera, Function Switch)
PUSH SWITCH (ZOOM)
LS-33
(Mech Control)
VF-42
(View Finder)
VC-122
(Camera, Lens Drive)
JK-91
(Video/Audio Jack)
CD-92
(CCD Imager)
VS-95
(REC/PB Head Amplifier, Video, Servo/System Control)


DD-48
(Power)
ED-35
(Camera, Function Switch)
VK-27
(VTR Function Switch)
SL-27
(Mech Control)
MA-149
(Mic Jack, Mic Amplifier)
CF-32
(Camera, Function Switch)
AU-138
(AFM Audio)
CN-65
(Board Link)
LM-40
(Loading Motor Drive)
LI-44
(Lithium Battery Holder)
MF-191
(Manual Focus Switch)

3-2. OVERALL BLOCK DIAGRAM

(See Page 116)
S971, 973 LENS CLOSE, FOCUS SWITCH
S972 MANUAL FOCUS
KEY IN 4, 6
KEY OUT 0, 4
FOCUS 1, 2
MF-191 BOARD
VC-122 BOARD (See Page 85, 88, 92)
(See Page 79)
CD-92 BOARD
IC875 CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS METER
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
IC805 SIGNAL SEPARATION AGC
GY OUT
IC802, IC803 A/D CONV
D0-D9
IC707 CAMERA CORE (DIGITAL CAMERA PROCESS)
CAM Y
CAM C
IC804 V DRIVE
IC801 TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
IC702 EVR
ADJUST VOLTAGE
CAM SO, CAM SI, CAM SCK
IC705 OPD
IC704 SYNC GENERATOR
IC851
IC852 IRIS DRIVE HALL AMP
IC854 ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS PWM
HALL OUT
IC856 ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC853 FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
IC709 CAMERA CONTROL
IC706 FOCUS PRE DRIVE
FOCUS 1, 2
VTR SO, VTR SI, VTR SCK
ZOOM SW
FOCUS M A, B, A, B
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM W, T
VS-95 BOARD (See Page 100, 104, 107)
DATA TO MSTR, DATA TO SLV, SCK
IC406 CHARACTER GENERATOR
IC405 EEP ROM
IC402 MECHA CONTROL / SERVO
MECHA CONTROL
SERVO
IC410 LOADING MOTOR DRIVE
LOAD, UN LOAD
M903 LOADING MOTOR
FP-442 BOARD
S001 MODE SWITCH
S005 CC DOWN
DEW SENSOR
MSW A-C
CC DOWN
DEW SENS
DEW
VIDEO, AUDIO, SERVO CONTROL SIG.
D001 TAPE LED
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
TOP SENS
TAPE TOP DETECT
IC521 T REEL FG AMP, S REEL FG AMP
T REEL (+), (-)
S REEL (+), (-)
T REEL FG
S REEL FG
END SENS
TAPE END DETECT
TAPE LED (K)
S002 ME/MP REC PROOF
ME/MP SW
REC PROOF SW
LS-33 BOARD (1/2) (See Page 118)
IC521 (1/2) WAVE SHAPER
D PG, D FG
DRUM PG, DRUM FG
(See Page 119)
SL-27 BOARD
IC408 (1/2) LPF
DRUM ERROR
DRUM PWM
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
RF SWP
1/2 RF SWP
CLOG PB, SP/LP DET
IC403 LCD/MODE CONTROL
IC407 SIRCS CONTROL
SIRCS
IC401 BACKUP Vdd SWITCH
BACKUP VDD
VTR UNREG
LI-3V
KEY IN 0 ~6
KEY OUT 0 ~5
IC409 LANC I/O
LANC SO, LANC SI
LANC DATA
(See Page 117)
VK-27 BOARD
S976~981, 983 KEY MATRIX (POWER SWITCH, VTR FUNCTION SWITCH)
(See Page 116)
ED-35 BOARD
S986~990 KEY MATRIX (EDIT, REMOCON, DDS, BEEP SWITCH)
(See Page 115)
CF-32 BOARD
S991~996 KEY MATRIX (PROGRAM AE, CUNTER RESET, TAPE RESET, FADER, DDS SWITCH)
SP991
BEEP ON
LI 3V
LITHIUM BATTERY
LI-44 BOARD
(See Page 117)
(See Page 137)
SW-205 BOARD
S519, 520 KEY MATRIX (STANDBY, START/STOP SWITCH)
DD-48 BOARD (1/2) (See Page 137)
S901 KEY MATRIX (EJECT SWITCH)
J902 REMOTE
IC901 (1/3)
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
CAM DD ON
CAM 15V
CAM -9V
CAM 5V
D4V
D5V
MT 5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
EVF UNREG
VTR UNREG
MAIN BATTERY
VF-42 BOARD (See Page 131)
DY H V
DH1, DH2
T501
HV
H
H OUT
G1
CRT
CRT DRIVE
IC501
EVF VIDEO
JK-91 BOARD (See Page 117)
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
IC151
IC154 ~ IC156
CAM Y
VIDEO OUT
EVF OUT
Y PROCESS
IC152
CAM C
C PROCESS
Y RF
PB RF
PB C RF
REC C RF
IC156, IC158 EVR
ADJUST VOLTAGE
IC001, IC003 REC/PB AMP
CH1 B
CH1 A
RF SWP
FLYING ERASE
FLYING ERASE OSC
FE
M901 DRUM MOTOR
DRUM PG, FG
IC408 (1/2) DRUM MOTOR DRIVE
DRUM VS
DD-48 BOARD (1/2) (See Page 137)
DRUM PWM DRIVE
IC901 (1/3)
IC901 (1/3) CAPSTAN PWM DRIVE
CAP VS
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC001 CAPSTAN MOTOR DRIVE
WAVE SHAPER
(See Page 118)
LS-33 BOARD (1/2)
IC404 ATF SERVO PB SP/LP DET CLOG DET
REC ATF
PB RF
REF PILOT
ATF ERROR
(See Page 126)
MA-149 BOARD
IC551 MIC AMP
MIC
MIC SIG
AU-138 BOARD (See Page 125)
IC601 AFM AUDIO PROCESS
AUDIO OUT
MIC SIG
REC AFM
PB RF
REMOTE CONTROL RECIEVER
IC602
SIRCS
(See Page 126)
ZOOM SW
ZOOM SWITCH
09

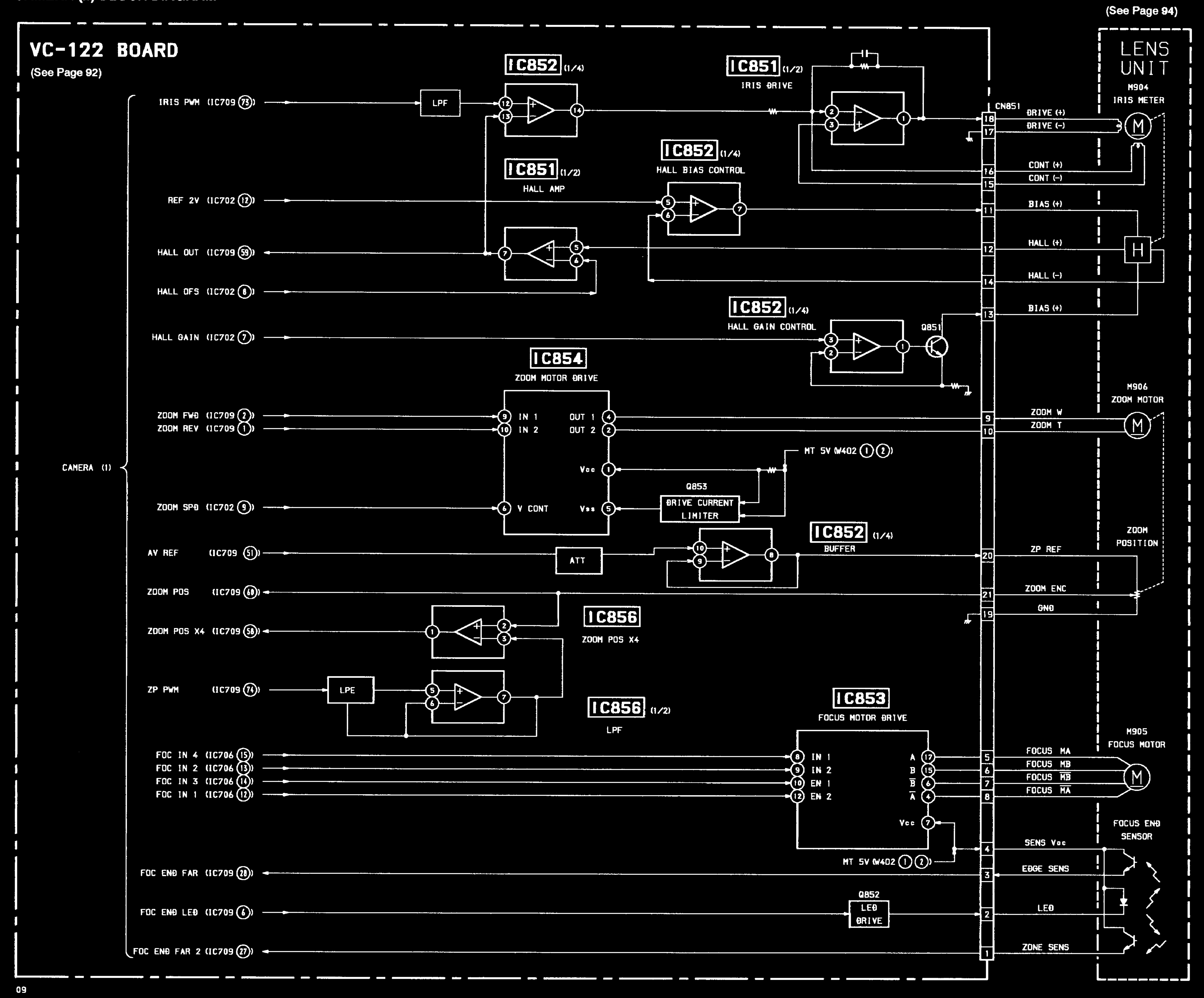
3-3. CAMERA (1) BLOCK DIAGRAM

(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
Q877
BUFFER
CN875
VC-122 BOARD
(See Page 85, 88)
IC805
SIGNAL SEPARATION
AGC/ IRIS CONTROL
IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC703
CHARACTER MIX
Q709
WHITE LEVEL
BLACK LEVEL
Q703
SYNC-TIP CLAMP
FL701, 702
IC804
V DRIVE
IC801
TIMING GENERATOR
IC702
D/A CONVERTER (EVR)
IC709
CAMERA CONTROL
IC705
OPD
IC706
FOCUS PRE DRIVER
IC712
EEP ROM
(NON VOLATILE MEMORY)
IC704
SYNC GENERATOR
AFC
HALF H KILLER
SPEED DETECT
PHASE COMP
LPF
CAMERA (2)

3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-417R/424R/434R)

Pin No.	Signal	I/O	Function
1	ZOOM M REV	O	Zoom motor control signal. Normally "L". 15.7 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE.
2	ZOOM M FWD	O	Zoom motor control signal. Normally "L". 15.7 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE.
3			Not used.
4			
5			
6	FOC END LED	O	Focus end sensor LED control signal. Normally "L".
7	RT05/D5		Not used.
8	$\overline{\text{CORE RESET}}$	O	Camera core (IC707 on VC-122 board) reset signal. Normally "H". "L" when reset.
9	PDR RESET	O	Focus predriver (IC706 on VC-122 board) reset signal. Normally "H". "L" when reset.
10			Not used.
11	TG STBY0		
12	OPD RESET	O	OPD (IC705 on VC-122 board) reset signal. "H": camera mode. "L": VTR mode.
13			Not used.
14			
15			
16			
17			
18			
19			
20			
21	EPROM DO	O	Connected to +5V.
22	EPROM BUSY	I	BUSY signal from EEPROM. Normally "H". "L" pulse when data reading/writing.
23			Not used.
24			
25			Connected to +5V.
26			
27	WIDE END		Focus Zone sensor input. Normally "L".
28	FOC END FAR	I	Focus edge sensor input. Normally "L".
29	$\overline{\text{CAM ON}}$	O	Power supply control signal. Normally "L".
30			Not used.
31			
32			
33			
34			
35			
36			
37	MP		Connected to GND.
38	$\overline{\text{CAM RESET}}$	I	Reset signal input. Normally "H". "L" when reset.
39	VSS		GND
40	XTAL	O	12 MHz clock oscillation circuit.
41	EXTAL	I	
42	$\overline{\text{CS CAM}}$	I	Chip select signal from mode control microprocessor. (IC403 on VS-95 board)
43	VTR SI	I	Serial data input from mode control microprocessor.
44	VTR SO	O	Serial data output from mode control microprocessor.
45	VTR SCK	I	Serial data transfer clock.
46			Not used.
47			
48			
49			Not used.
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
56	MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
57	ZOOM SW	I	Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input.
58	ZOOM POS X4	I	Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end).
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60	ZOOM POS	I	Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end).
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controler (IC402 on VS-95 board).
63	PG5/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			
68	AF BUSY	I	AF busy signal.
69			Not used.
70			
71			
72			
73	IRIS PWM	O	Iris control signal. 21 µsec period PWM signal.
74	ZM PWM	O	Zoom position detection voltage output. 21 µsec period PWM signal.
75			Not used.
76			
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally "H".
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		
84	PI O		Connected to +5V.
85	PKO		
86	GND		GND
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC706 on VC-122 board).
91	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC702 on VC-122 board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-122 board).
93	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC705 on VC-122 board).
94	$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
95	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-122 board).
96	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-122 board).
97			Not used.
98	$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

3-5. CAMERA (2) BLOCK DIAGRAM


VC-122 BOARD
(See Page 92)
(See Page 94)
LENS UNIT
CAMERA (1)
IRIS PWM (IC709 (73))
REF 2V (IC702 (12))
HALL OUT (IC709 (59))
HALL OFS (IC702 (8))
HALL GAIN (IC702 (7))
ZOOM FWD (IC709 (2))
ZOOM REV (IC709 (1))
ZOOM SPD (IC702 (9))
AV REF (IC709 (51))
ZOOM POS (IC709 (60))
ZOOM POS X4 (IC709 (58))
ZP PWM (IC709 (74))
FOC IN 4 (IC706 (15))
FOC IN 2 (IC706 (13))
FOC IN 3 (IC706 (14))
FOC IN 1 (IC706 (12))
FOC END FAR (IC709 (28))
FOC END LED (IC709 (6))
FOC END FAR 2 (IC709 (27))
LPF
IC852 (1/4)
IC851 (1/2)
HALL AMP
IC851 (1/2)
IRIS DRIVE
IC852 (1/4)
HALL BIAS CONTROL
IC852 (1/4)
HALL GAIN CONTROL
Q851
IC854
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W402 (1)(2))
Q853
DRIVE CURRENT LIMITER
ATT
IC852 (1/4)
BUFFER
IC856
ZOOM POS X4
LPE
IC856 (1/2)
LPF
IC853
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
$\overline{\text{B}}$
$\overline{\text{A}}$
Vcc
MT 5V (W402 (1)(2))
Q852
LED DRIVE
CN851
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
BIAS (+)
HALL (+)
HALL (-)
BIAS (+)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS $\overline{\text{MB}}$
FOCUS $\overline{\text{MA}}$
SENS Vcc
EDGE SENS
LED
ZONE SENS
M904
IRIS METER
H
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END SENSOR
09

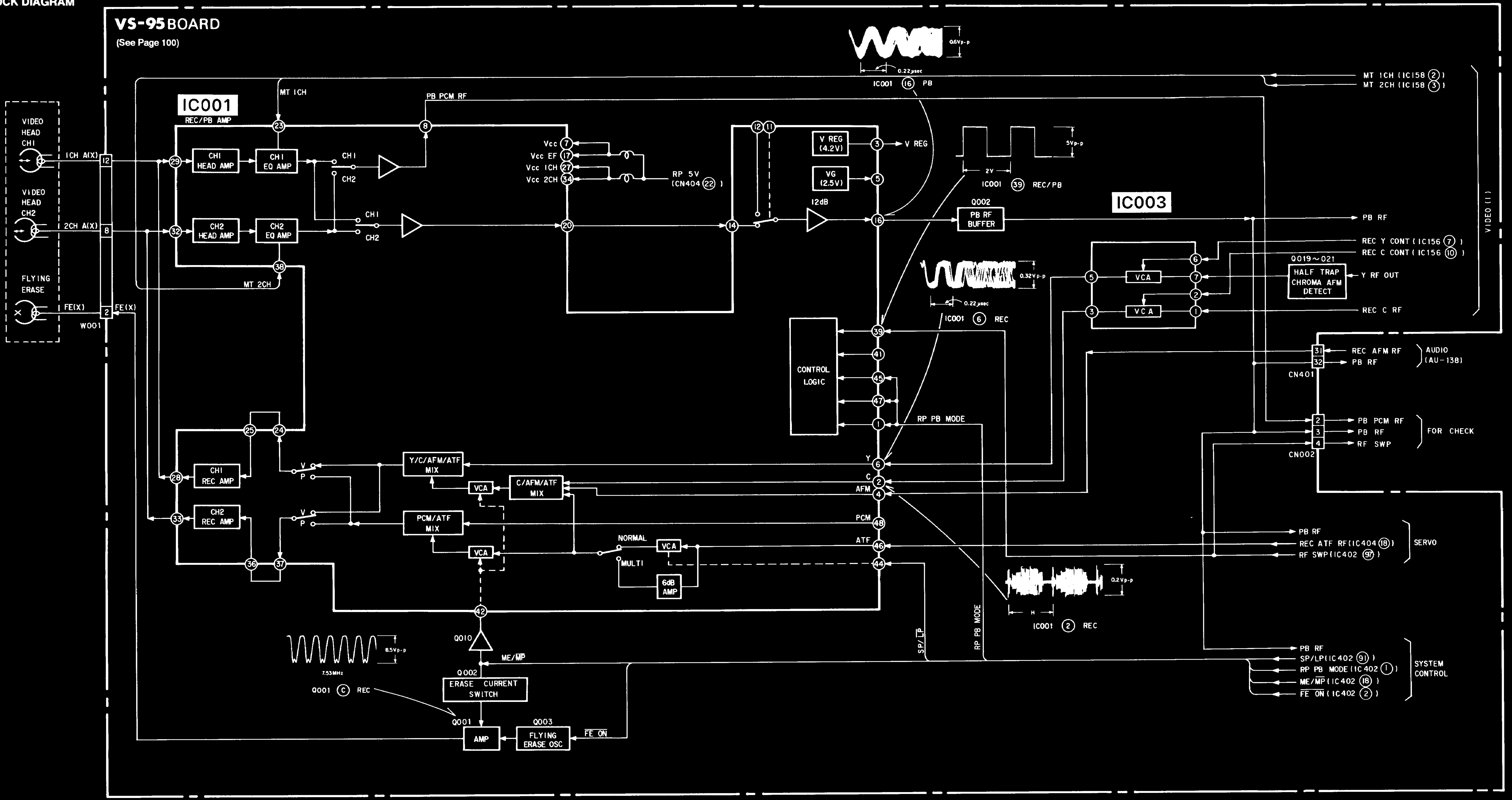
Pin No.	Signal	I/O	Function
49			Not used.
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
56	MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
57	ZOOM SW	I	Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input.
58	ZOOM POS X4	I	Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end).
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60	ZOOM POS	I	Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end).
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controler (IC402 on VS-95 board).
63	PG5/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			
68	AF BUSY	I	AF busy signal.
69			Not used.
70			
71			
72			
73	IRIS PWM	O	Iris control signal. 21 µsec period PWM signal.
74	ZM PWM	O	Zoom position detection voltage output. 21 µsec period PWM signal.
75			Not used.
76			
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally “H”.
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		
84	PI O		Connected to +5V.
85	PKO		
86	GND		GND
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC706 on VC-122 board).
91	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC702 on VC-122 board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-122 board).
93	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC705 on VC-122 board).
94	$\overline{\text{NTSC}}$	O	NTSC: “L”, PAL: “H”.
95	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-122 board).
96	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-122 board).
97			Not used.
98	$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

Pin No.	Signal	I/O	Function
49			Not used.
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
56	MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
57	ZOOM SW	I	Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input.
58	ZOOM POS X4	I	Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end).
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60	ZOOM POS	I	Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end).
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controler (IC402 on VS-65 board).
63	PGS/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			
68	AF BUSY	I	AF busy signal.
69			Not used.
70			
71			
72			
73	IRIS PWM	O	Iris control signal. 21 μsec period PWM signal.
74	ZM PWM	O	Zoom position detection voltage output. 21 μsec period PWM signal.
75			Not used.
76			
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally "H".
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		
84	PI O		Connected to +5V.
85	PKO		
86	GND		GND
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC706 on VC-122 board).
91	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC702 on VC-122 board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-122 board).
93	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC705 on VC-122 board).
94	$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
95	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-122 board).
96	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-122 board).
97			Not used.
98	$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

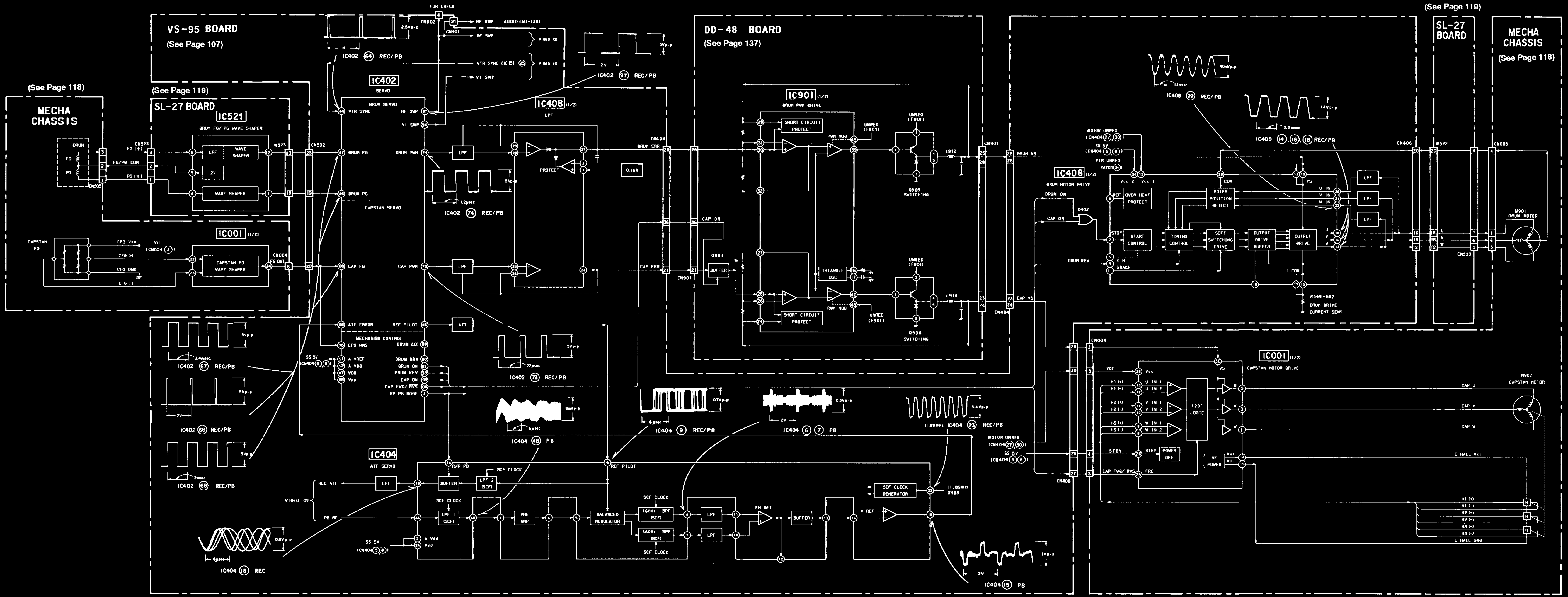
3-6. VIDEO (1) BLOCK DIAGRAM

VS-95 BOARD
(See Page 104)
(See Page 117)
JK-91 BOARD
IC159
IC151
IC155
MAIN-EMPHASIS
SUB-EMPHASIS
NOISE CANSEL
Y COMB FILTER
COMB FILTER
Y/C MIX
IC154
IC152
IC156
IC158

3-7. VIDEO (2) BLOCK DIAGRAM


VS-95 BOARD
(See Page 100)
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
1CH A(X)
2CH A(X)
FE(X)
FE(X)
W001
12
8
2
IC001
REC/PB AMP
MT 1CH
MT 2CH
PB PCM RF
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
Vcc ⑦
Vcc EF ⑰
Vcc 1CH ㉗
Vcc 2CH ㉞
RP 5V (CN404 ㉒)
V REG (4.2V)
VG (2.5V)
V REG
12dB
0.6Vp-p
0.22μsec
IC001 ⑯ PB
5Vp-p
2V
IC001 ㊴ REC/PB
Q002
PB RF BUFFER
IC003
0.32Vp-p
0.22μsec
IC001 ⑥ REC
CONTROL LOGIC
RP PB MODE
Y
C
AFM
PCM
ATF
VCA
VCA
Q019～021
HALF TRAP CHROMA AFM DETECT
MT 1CH (IC158 ②)
MT 2CH (IC158 ③)
PB RF
REC Y CONT (IC156 ⑦)
REC C CONT (IC156 ⑩)
Y RF OUT
REC C RF
VIDEO (1)
REC AFM RF
PB RF
AUDIO (AU-138)
CN401
PB PCM RF
PB RF
RF SWP
FOR CHECK
CN002
CH1 REC AMP
CH2 REC AMP
V
P
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
PCM/ATF MIX
VCA
NORMAL
MULTI
6dB AMP
0.2Vp-p
H
IC001 ② REC
SP/LP
RP PB MODE
PB RF
REC ATF RF(IC404 ⑱)
RF SWP(IC402 ㊷)
SERVO
PB RF
SP/LP(IC402 ㊻)
RP PB MODE(IC402 ①)
ME/MP (IC402 ⑱)
FE ON (IC402 ②)
SYSTEM CONTROL
Q010
ME/MP
8.5Vp-p
7.53MHz
Q001 Ⓒ REC
Q002
ERASE CURRENT SWITCH
Q001
AMP
Q003
FLYING ERASE OSC
FE ON

3-8. SERVO BLOCK DIAGRAM


MECHA CHASSIS
(See Page 118)
(See Page 119)
SL-27 BOARD
IC521
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
2V
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
CAPSTAN FG
VS-95 BOARD
(See Page 107)
FOR CHECK
RF SWP
AUDIO (AU-138)
VIDEO (2)
VIDEO (1)
VTR SYNC (IC151)
V I SWP
IC402 64 REC/PB
IC402
SERVO
DRUM SERVO
VTR SYNC
RF SWP
VI SWP
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
IC402 74 REC/PB
IC402 97 REC/PB
IC408 (1/2)
LPF
PROTECT
DJ6V
ATF ERROR
REF PILOT
ATT
MECHANISM CONTROL
CFG HMS
DRUM ACC
DRUM BRK
DRUM ON
DRUM REV
CAP ON
CAP FWD/RVS
RP PB MODE
A VREF
A VDD
VDD
Vss
S5 5V
IC402 67 REC/PB
IC402 66 REC/PB
IC402 68 REC/PB
IC402 73 REC/PB
IC404 48 PB
IC404 9 REC/PB
IC404 6 7 PB
IC404 23 REC/PB
IC404
ATF SERVO
REC ATF
VIDEO (2)
PB RF
BUFFER
LPF 2 (SCF)
SCF CLOCK
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16kHz BPF (SCF)
46kHz BPF (SCF)
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.89MHz X403
IC404 18 REC
IC404 15 PB
DD-48 BOARD
(See Page 137)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
TRIANGLE OSC
UNREG (F901)
Q905 SWITCHING
Q906 SWITCHING
L912
L913
CAP ON
Q901
BUFFER
DRUM ERR
CAP ERR
CN404
CN901
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
CAP ON
D402
DRUM REV
MOTOR UNREG
VTR UNREG
OVER-HEAT PROTECT
ROTOR POSITION DETECT
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
STBY
BRAKE
COM
LPF
R549-552 DRUM DRIVE CURRENT SENS
IC408 22 REC/PB
IC408 14, 16, 18 REC/PB
DRUM VS
CAP VS
M901 DRUM MOTOR
IC001 (1/2)
CAPSTAN MOTOR DRIVE
120° LOGIC
POWER OFF
HE POWER
FRC
M902 CAPSTAN MOTOR
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND

3-9. SYSTEM CONTROL BLOCK DIAGRAM

VK-27 BOARD
(See Page 117)
ED-35 BOARD
(See Page 116)
(See Page 115)
CF-32 BOARD
(See Page 115)
CN-65 BOARD
VS-95 BOARD
(See Page 107)
MF-191 BOARD
(See Page 116)
IC403
MODE CONTROL (MASTER)
IC407
SIRCS CONTROL
IC405
EEPROM
IC402
MECHANISM CONTROL
IC410
LOADING MOTOR DRIVE
SL-27 BOARD
(See Page 119)
(See Page 118)
MECHA SHASSIS
LM-40 BOARD
FP-442 BOARD
IC501
LS-33 BOARD
SERVO
VIDEO (2)
VIDEO (1)
AUDIO
SW-205 BOARD
(See Page 137)
DD-48 BOARD
(See Page 137)
IC409
LANC I/O
IC401
(See Page 117)
LI-44 BOARD
LITHIUM BATTERY
IC406
CHARACTER GENERATOR
CAMERA
(See Page 126)
ZOOM SWITCH UNIT
(See Page 125)
IC602
REMOTE CONTROL RECEIVER
AU-138 BOARD
IC404
SP/LP DETECT CLOG DETECT
INTEGRATOR
CR PULSE

3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	PB3/PP011	RP PB MODE	O	RP	REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATF servo IC (IC404 on VS-95 board). "H": PB.
2	PB2/PP010	FE ON	O	RP	Flying erase oscillation ON/OFF control signal. "L": oscillation.
3	PB1/PP09	JOG VD	O	VA	False VD signal to be inserted into playback video signal during variable speed playback.
4	PB0/PP08	JOG	O	VA	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.
5	PC7/RT07	JACK IN/OUT	I	VA	Not used. Connected to +5V.
6	PC6/RT06	1.7M DET	I	VA	Not used.
7	PC5/RT05	JACK MONO/STE DET	I	VA	
8	PC4/RT04	INT VD	I		
9	PC3/RT03	PB V (SYSTEM SYNC)	O	MODE CON	V sync for mode controller.
10	PC2/RT018	SYNC DET OUT	O	VA	Sync detect output. "L" when Sync is detected.
11	PC1/RT017	E/L DET	I	VA	Not used.
12	PC0/RT016	MIC MONO/ST DET	I	AU	
13	PJ7	M SW 0	I	MD	Mode switch input.
14	PJ6	M SW 1	I	MD	
15	PJ5	M SW 2	I	MD	

	BL	END	EJECT	USE	LOAD	READY	TURN	REC/PB	FF
M SW 0	L	L	L	H	L	H	H	L	L
M SW 1	L	H	L	L	L	L	H	H	L
M SW 2	L	H	H	H	H	L	L	L	L

Pin No.	Port Name	Signal	I/O	Connection	Function
16	PJ4	CC DOWN	I	MD	Cassette compartment down switch input. "L": down.
17	PJ3	REC PROOF	I	MD	Erasure protection switch input. "L" when REC prohibit.
18	PJ2	ME/MP	I	MD	ME/MP switch input. "L": MP, "H": ME.
19	PJ1	HG/NOR	I	MD	Connected to GND.
20	PJ0	VIDEO MUTE	O	VA	Video output mute signal. "H": mute.
21	PD7	LINE MIX	I	VA	Not used.
22	PD6	MAT SEL 1	I	VA	
23	PD5	MAT SEL 2	I	VA	
24	PD4	MAT ON/OFF	O	VA	
25	PD3	E MODE	O	VA	
26	PD2	CAM/LINE	O	VA	Camera input/line input select signal. "H" when camera input.
27	PD1	DS ON	O	VA	Data screen ON/OFF signal. "H": ON.
28	PD0	EDIT	O	VA	Video circuit EDIT/NORMAL switch signal. "L": EDIT.
29	PH7	UNLOAD	O	SS	Loading motor control signal. "H" or "H" pulse when unloading.
30	PH6	LOAD	O	SS	Loading motor control signal. "H" or "H" pulse when loading.
31	PH5	LM LIM COM	O	SS	Loading motor limiter control signal. Temporary "H" when loading.
32	PH4	COMP REC	O	VA	Not used.
33	PH3	DRUM REV	O	SS	Drum rotating control signal . Normally "L".
34	PH2		O		N.C.
35	PH1		O		
36	PH0	REEL HALL CONT	O	SS	Reel FG sensor (HALL element) power supply control signal.
37	MP	MP			Connected to GND.
38	RST	RESET	I	MODE CON	Reset signal from mode control microprocessor. "L" when reset.
39	VSS	VSS			GND
40	XTAL	XTAL	I	SS	11.89 MHz clock oscillation circuit.
41	EXTAL	EXTAL	O	SS	
42	CSO	VTR COSMO CS	I	MODE CON	Chip select signal from mode control microprocessor (VS-95 board IC403)
43	S10	DATA TO SLVE	I	MODE CON	Serial data input from mode control microprocessor.
44	S00	DATA TO MSTR	O	MODE CON	Serial data output to mode control microprocessor.
45	SCKO	SCK	I	MODE CON	Serial clock input from mode control microprocessor.

3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	PB3/PP011	RP PB MODE	O	RP	REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATP servo IC (IC404 on VS-95 board). "H": PB.
2	PB2/PP010	$\overline{\text{FE ON}}$	O	RP	Flying erase oscillation ON/OFF control signal. "L": oscillation.
3	PB1/PP09	JOG VD	O	VA	False VD signal to be inserted into playback video signal during variable speed playback.
4	PB0/PP08	JOG	O	VA	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.
5	PC7/RT07	JACK $\overline{\text{IN}}$/OUT	I	VA	Not used. Connected to +5V.
6	PC6/RT06	4.7M DET	I	VA	Not used.
7	PC5/RT05	JACK $\overline{\text{MONO}}$/STE DET	I	VA	
8	PC4/RT04	INT VD	I		
9	PC3/RT03	PB V (SYSTEM SYNC)	O	MODE CON	V sync for mode controller.
10	PC2/RT018	$\overline{\text{SYNC DET OUT}}$	O	VA	Sync detect output. "L" when Sync is detected.
11	PC1/RT017	E/$\overline{\text{L}}$ DET	I	VA	Not used.
12	PC0/RT016	MIC $\overline{\text{MONO}}$/ST DET	I	AU	
13	PJ7	M SW 0	I	MD	Mode switch input.
14	PJ6	M SW 1	I	MD	
15	PJ5	M SW 2	I	MD	
16	PJ4	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment down switch input. "L": down.
17	PJ3	$\overline{\text{REC PROOF}}$	I	MD	Erasure protection switch input. "L" when REC prohibit.
18	PJ2	ME/$\overline{\text{MP}}$	I	MD	ME/MP switch input. "L": MP, "H": ME.
19	PJ1	HG/$\overline{\text{NOR}}$	I	MD	Connected to GND.
20	PJ0	VIDEO MUTE	O	VA	Video output mute signal. "H": mute.
21	PD7	LINE MIX	I	VA	Not used.
22	PD6	MAT SEL 1	I	VA	
23	PD5	MAT SEL 2	I	VA	
24	PD4	MAT ON/$\overline{\text{OFF}}$	O	VA	
25	PD3	E MODE	O	VA	
26	PD2	CAM/$\overline{\text{LINE}}$	O	VA	Camera input/line input select signal. "H" when camera input.
27	PD1	DS ON	O	VA	Data screen ON/OFF signal. "H": ON.
28	PD0	$\overline{\text{EDIT}}$	O	VA	Video circuit EDIT/NORMAL switch signal. "L": EDIT.
29	PH7	UNLOAD	O	SS	Loading motor control signal. "H" or "H" pulse when unloading.
30	PH6	LOAD	O	SS	Loading motor control signal. "H" or "H" pulse when loading.
31	PH5	$\overline{\text{LM LIM COM}}$	O	SS	Loading motor limiter control signal. Temporary "H" when loading.
32	PH4	COMP REC	O	VA	Not used.
33	PH3	DRUM REV	O	SS	Drum rotating control signal . Normally "L".
34	PH2		O		N.C.
35	PH1		O		
36	PH0	$\overline{\text{REEL HALL CONT}}$	O	SS	Reel FG sensor (HALL element) power supply control signal.
37	MP	MP			Connected to GND.
38	RST	$\overline{\text{RESET}}$	I	MODE CON	Reset signal from mode control microprocessor. "L" when reset.
39	VSS	VSS			GND
40	XTAL	XTAL	I	SS	11.89 MHz clock oscillation circuit.
41	EXTAL	EXTAL	O	SS	
42	CS0	$\overline{\text{VTR COSMO CS}}$	I	MODE CON	Chip select signal from mode control microprocessor (VS-95 board IC403)
43	SI0	DATA TO SLVE	I	MODE CON	Serial data input from mode control microprocessor.
44	SO0	DATA TO MSTR	O	MODE CON	Serial data output to mode control microprocessor.
45	SCK0	SCK	I	MODE CON	Serial clock input from mode control microprocessor.

	SL	END	EJECT	USE	LOAD	READY	TURN	REC/PB	FF
M SW 0	L	L	L	H	L	H	H	L	L
M SW 1	L	H	L	L	L	L	H	H	L
M SW 2	L	H	H	H	H	L	L	L	L

Pin No.	Port Name	Signal	I/O	Connection	Function
46	PF7/AN11	AUDIO MUTE	O	VA	Audio output mute signal. "H": mute.
47	PF6/AN10	1.7M OFF	O	VA	Not used.
48	PF5/AN9	GND	I		GND
49	PF4/AN8	GND	I		
50	AVSS	AVSS			Analog port GND.
51	AVREF	AVREF			Analog port reference voltage. Connected to +5V.
52	AVDD	VDD			Analog port power supply (5V).
53	PF3/AN7	N.C.			Connected to GND.
54	PF2/AN6	END SENS	I	SS	Tape end detection signal. Normally "L", "H" pulse: tape end.
55	PF1/AN5	TOP SENS	I	SS	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	PF0/AN4	DEW	I	SS	Dew condensation detection signal. "L" when dew condensation.
57	AN3	BATT SENSE	I	SS	Battery voltage input for battery end detection. 1/2 divided by RB401.
58	AN2	ATF ERROR	I	SS	ATF error, ATF lock error input.
59	AN1	S REEL FG	I	SS	S reel FG signal input.
60	AN0	T REEL FG	I	SS	T reel FG signal input.
61	PG7/EXI1	PG7 (N.C.)			Connected to GND.
62	PG6/EXI0	CAM VD	I	CAM SG	VD signal from camera circuit sync generator. V period pulse.
63	PG5/SYNC1	FLD	I	CAM SG	FIELD signal from camera circuit sync generator. 2V period pulse.
64	PG4/SYNC0	VTR SYNC	I	VA	Composite sync signal separated from REC/PB Y signal.
65	PG3/PBCTL	PB SP/LP DET	I	SS	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	PG2/DPG	DRUM PG	I	SS	Drum PG signal input. For drum phase servo 33.3 msec period "H" pulse.
67	PG1/DFG	DRUM FG	I	SS	Drum FG signal input. For drum speed servo 2.8 msec period pulse.
68	PG0/CFG	CAP FG	I	MD	Capstan FG signal input. For capstan speed servo. Approx. 994 Hz when REC/PB (SP).
69	PE7/DAB0	N.C.	O		N.C.
70	PE6/DAB0	T/E LED ON	O	SS	Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB.
71	PE5/DAA1	N.C.	O		N.C.
72	PE4/DAA0	N.C.	O		
73	PE3/PWM1	CAP PWM	O	SS	Capstan error signal output 20.15 µsec PWM signal.
74	PE2/PWM0	DRUM PWM	O	SS	Drum error signal output 20.15 µsec PWM signal.
75	PE1/EC/INT2	C FG	I	MD	Capstan FG signal input. For tape counter.
76	PE0/INT0	$\overline{\text{S JACK IN}}$			Not used, connected to +5V.
77	P17/ST1	LANC IN	I	SS	Control L serial data input.
78	P16/SO1	LANC OUT	O	SS	Control L serial data output.
79	P15/SCK1	LM LIMIT DET	I	SS	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	P14/INT1	AGC SLOW			Not used.
81	P13/TO	DRUM ON	O	SS	Drum driver ON/OFF control signal. "H" when drum ON.
82	P12/PWM	CLOG	O	SS	Head clog detection signal. "L" when no trouble.
83	P11/PO	REF PILOT	O	SS	ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=102.52 kHz, f2=118.95 kHz, f3=165.21 kHz and f4=148.69 kHz.
84	P10/PCK				Connected to +5V.
85	PKO	13/10 SW	I	MD	Not used.
86	VSS	VSS			GND
87	VDD	VDD			VDD
88	N.C.	(VPP)			Connected to +5V.
89	PA7/PP07	DRUM ACC	O	SS	Drum motor acceleration signal. Not used.

Pin No.	Port Name	Signal	I/O	Connection	Function
46	PF7/AN11	AUDIO MUTE	O	VA	Audio output mute signal. "H": mute.
47	PF6/AN10	1.7M OFF	O	VA	Not used.
48	PF5/AN9	GND	I		GND
49	PF4/AN8	GND	I		
50	AVSS	AVSS			Analog port GND.
51	AVREF	AVREF			Analog port reference voltage. Connected to +5V.
52	AVDD	VDD			Analog port power supply (5V).
53	PF3/AN7	N.C.			Connected to GND.
54	PF2/AN6	END SENS	I	SS	Tape end detection signal. Normally "L", "H" pulse: tape end.
55	PF1/AN5	TOP SENS	I	SS	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	PF0/AN4	DEW	I	SS	Dew condensation detection signal. "L" when dew condensation.
57	AN3	BATT SENSE	I	SS	Battery voltage input for battery end detection. 1/2 divided by RB401.
58	AN2	ATF ERROR	I	SS	ATF error, ATF lock error input.
59	AN1	S REEL FG	I	SS	S reel FG signal input.
60	AN0	T REEL FG	I	SS	T reel FG signal input.
61	PG7/EXI1	PG7 (N.C.)			Connected to GND.
62	PG6/EXI0	CAM VD	I	CAM SG	VD signal from camera circuit sync generator. V period pulse.
63	PG5/SYNC1	FLD	I	CAM SG	FIELD signal from camera circuit sync generator. 2V period pulse.
64	PG4/SYNC0	VTR SYNC	I	VA	Composite sync signal separated from REC/PB Y signal.
65	PG3/PBCTL	PB SP/LP DET	I	SS	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	PG2/DPG	DRUM PG	I	SS	Drum PG signal input. For drum phase servo 33.3 msec period "H" pulse.
67	PG1/DFG	DRUM FG	I	SS	Drum FG signal input. For drum speed servo 2.8 msec period pulse.
68	PG0/CFG	CAP FG	I	MD	Capstan FG signal input. For capstan speed servo. Approx. 994 Hz when REC/PB (SP).
69	PE7/DAB0	N.C.	O		N.C.
70	PE6/DAB0	T/E LED ON	O	SS	Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB.
71	PE5/DAA1	N.C.	O		N.C.
72	PE4/DAA0	N.C.	O		
73	PE3/PWM1	CAP PWM	O	SS	Capstan error signal output 20.15 μsec PWM signal.
74	PE2/PWM0	DRUM PWM	O	SS	Drum error signal output 20.15 μsec PWM signal.
75	PE1/EC/INT2	C FG	I	MD	Capstan FG signal input. For tape counter.
76	PE0/INT0	$\overline{\text{S}}$ JACK IN			Not used, connected to +5V.
77	P17/ST1	LANC IN	I	SS	Control L serial data input.
78	P16/SO1	LANC OUT	O	SS	Control L serial data output.
79	P15/SCK1	LM LIMIT DET	I	SS	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	P14/INT1	AGC SLOW			Not used.
81	P13/TO	DRUM ON	O	SS	Drum driver ON/OFF control signal. "H" when drum ON.
82	P12/PWM	CLOG	O	SS	Head clog detection signal. "L" when no trouble.
83	P11/PO	REF PILOT	O	SS	ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=102.53 kHz, f2=118.95 kHz, f3=165.21 kHz and f4=148.69 kHz.
84	P10/PCK				Connected to +5V.
85	PXO	13/10 SW	I	MD	Not used.
86	VSS	VSS			GND
87	VDD	VDD			VDD
88	N.C.	(VPP)			Connected to +5V.
89	PA7/PP07	DRUM ACC	O	SS	Drum motor acceleration signal. Not used.

Pin No.	Port Name	Signal	I/O	Connection	Function
90	PA6/PP06	DRUM BRK	O	SS	Drum motor brake signal. Normally "L".
91	PA5/PP05	SP/$\overline{\text{LP}}$	O	VA	SP/LP select signal. "L": LP.
92	PA4/PP04	AU IN/OUT	O		Not used.
93	PA3/PP03	VIDEO O SW	O	VA	VIDEO OUT inhibit signal. "H": inhibit.
94	PA2/PP02	VIDEO I SW	O	VA	VIDEO IN/OUT select signal. Not used.
95	PA1/PP01	VA PB MODE	O	ALL	Video/audio circuit REC/PB select signal. "H": PB.
96	PA0/PP00	VI SWP	O	VA	RF switching pulse signal for video circuit. 30 Hz, 50% duty pulse.
97	PB7/PP015	RF SWP	O	ALL	RF switching pulse signal for REC/PB amp and Audio circuit. 30 Hz, 50% duty pulse.
98	0	H CHG	O	VA	Not used.
99	11	CAP ON	O	MD	Capstan driver ON/OFF control signal. "H" when capstan ON.
100	PB4/PP012	CAP FWD/$\overline{\text{RVS}}$	O	MD	Capstan rotating direction control signal. "H": FWD, "L": RVS.

Pin No.	Port Name	Signal	I/O	Connection	Function
90	PA6/PP06	DRUM BRK	O	SS	Drum motor brake signal. Normally "L".
91	PA5/PP05	SP/$\overline{\text{LP}}$	O	VA	SP/LP select signal. "L": LP.
92	PA4/PP04	AU IN/OUT	O		Not used.
93	PA3/PP03	VIDEO O SW	O	VA	VIDEO OUT inhibit signal. "H": inhibit.
94	PA2/PP02	VIDEO I SW	O	VA	VIDEO IN/OUT select signal. Not used.
95	PA1/PP01	VA PB MODE	O	ALL	Video/audio circuit REC/PB select signal. "H": PB.
96	PA0/PP00	VI SWP	O	VA	RF switching pulse signal for video circuit. 30 Hz, 50% duty pulse.
97	PB7/PP015	RF SWP	O	ALL	RF switching pulse signal for REC/PB amp and Audio circuit. 30 Hz, 50% duty pulse.
98	0	H CHG	O	VA	Not used.
99	11	CAP ON	O	MD	Capstan driver ON/OFF control signal. "H" when capstan ON.
100	PB4/PP012	CAP FWD/$\overline{\text{RVS}}$	O	MD	Capstan rotating direction control signal. "H": FWD, "L": RVS.

3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: µPD75316)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
2	S13	S13	O		
3	S14	S14	O		
4	S15	S15	O		
5	S16	S16	O		
6	S17	S17	O		
7	S18	S18	O		
8	S19	S19	O		
9	S20	S20	O		
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	$\overline{\text{EEPROM CS}}$	O		Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse.
14	S25/BP1	N.C	O		Not used.
15	S26/BP2	TG STBY 1	O	CAM	Power save control signal to timing generator (IC801 on VC-122 board). Normally "L".
16	S27/BP3		O		N.C.
17	S28/BP4	$\overline{\text{CS TITLE}}$	O	CAM	Not used.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC907 on VS-95 board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O		Not used.
20	S31/BP7	$\overline{\text{CAM COSM CS}}$	O	CAM	Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse.
21	COM0	COM 0	O		Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
22	COM1	COM 1	O		
23	COM2	COM 2	O		
24	COM3	COM 3	O		
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resistor. Not used.
26	VLC0	VCC 0	I		Power source 0 input Power source for LCD dirve. Not used.
27	VLC1	VCC 1	I		Power source 1 input
28	VLC2	VCC 2	I		Power source 2 input
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	$\overline{\text{SYS RESET}}$	O	all	Output signal to reset each IC when power is turned on. Normally "H".
32	P43	$\overline{\text{TALLY}}$	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	$\overline{\text{BATT IN}}$	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/$\overline{\text{SCK}}$	$\overline{\text{SCK}}$	O	all	Serial clock output terminal, Serial clock (2 µS) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 µS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 µS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-95 board).

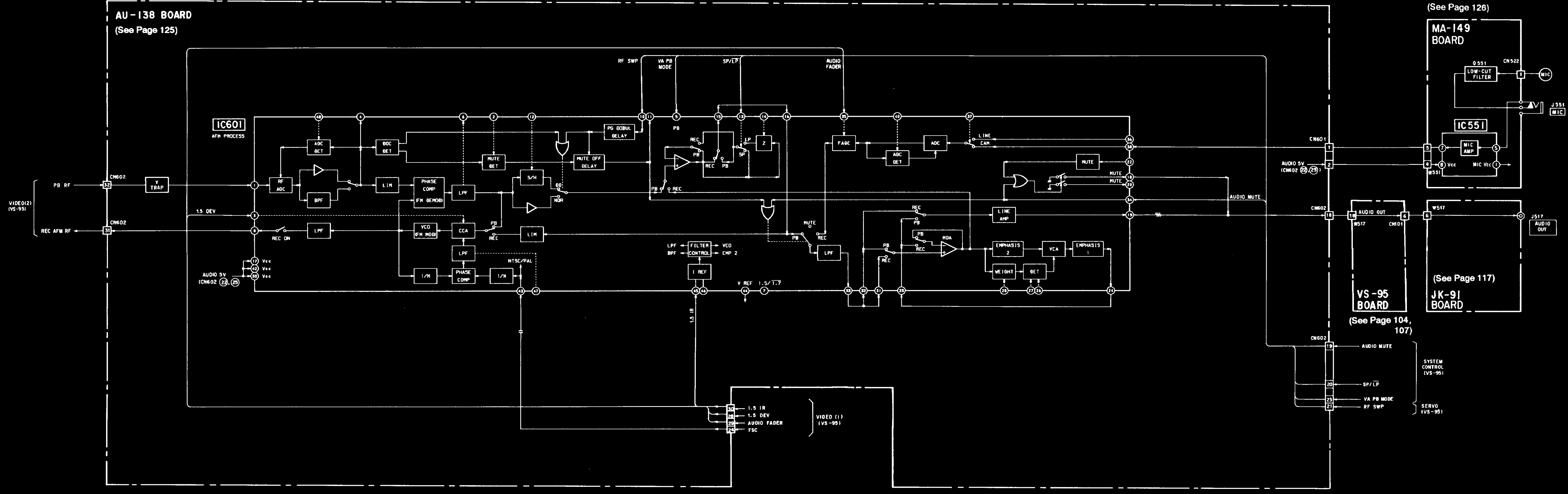
3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: μPD75316)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
2	S13	S13	O		
3	S14	S14	O		
4	S15	S15	O		
5	S16	S16	O		
6	S17	S17	O		
7	S18	S18	O		
8	S19	S19	O		
9	S20	S20	O		
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	$\overline{\text{EEPROM CS}}$	O		Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse.
14	S25/BP1	N.C	O		Not used.
15	S26/BP2	TO STBY 1	O	CAM	Power save control signal to timing generator (IC801 on VC-122 board). Normally "L".
16	S27/BP3		O		N.C.
17	S28/BP4	$\overline{\text{CS TITLE}}$	O	CAM	Not used.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC907 on VS-95 board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O		Not used.
20	S31/BP7	$\overline{\text{CAM COMM CS}}$	O	CAM	Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse.
21	COM0	COM 0	O		Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
22	COM1	COM 1	O		
23	COM2	COM 2	O		
24	COM3	COM 3	O		
25	BIAS	BIAS	O		Bias voltage output for voltage dividing resistor. Not used.
26	VLC0	VCC 0	I		Power source 0 input Power source for LCD drive. Not used.
27	VLC1	VCC 1	I		Power source 1 input
28	VLC2	VCC 2	I		Power source 2 input
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	$\overline{\text{SYS RESET}}$	O	all	Output signal to reset each IC when power is turned on. Normally "H".
32	P43	$\overline{\text{TALLY}}$	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	$\overline{\text{BATT IN}}$	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/$\overline{\text{SCK}}$	$\overline{\text{SCK}}$	O	all	Serial clock output terminal, Serial clock (2 μS) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption). System synchronization input port from CXP80424 (IC402 on VS-95 board).

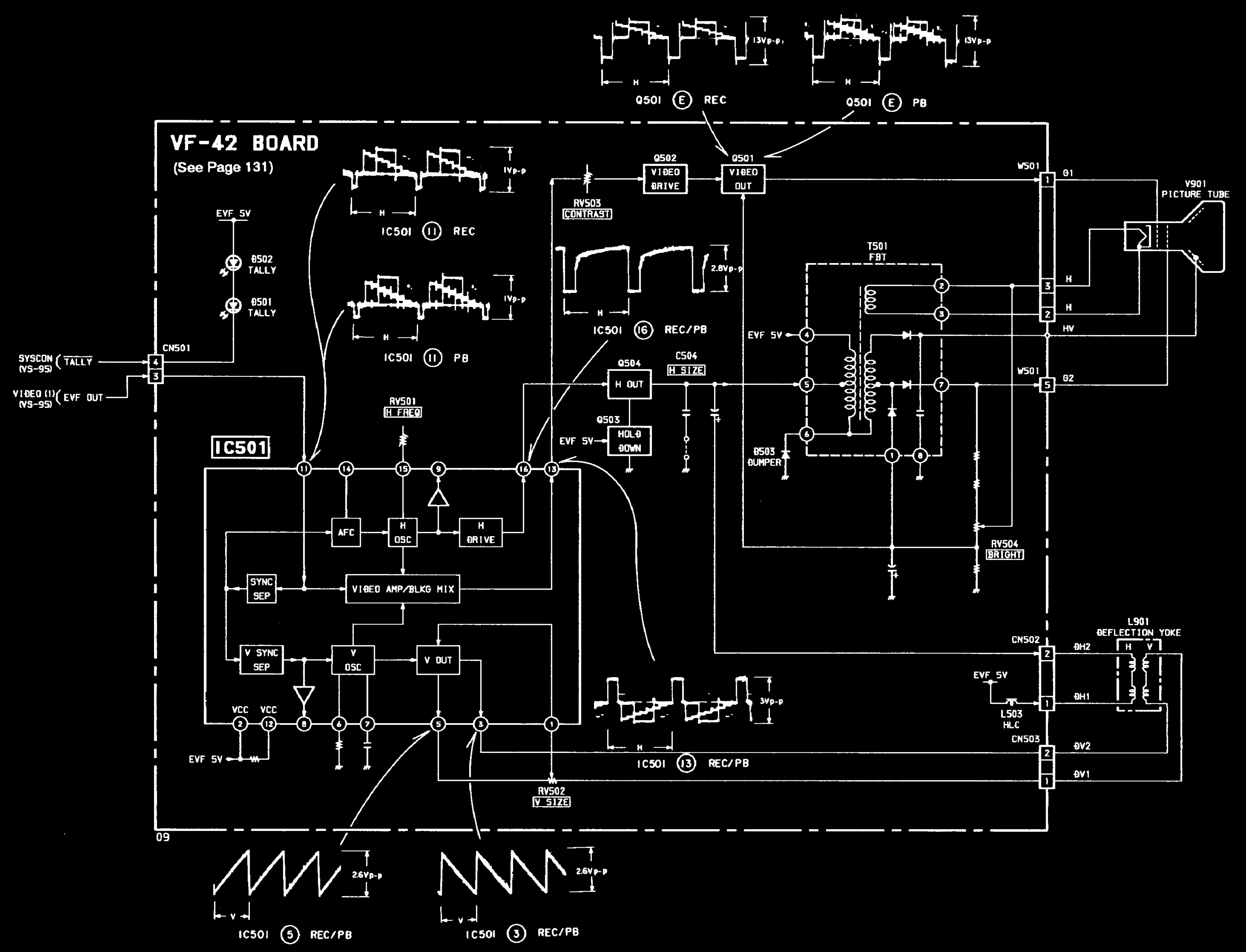
Pin No.	Port Name	Signal	I/O	Connection	Function
43	P11/INT1	$\overline{\text{LI PRE END}}$	I		(Edge detection vector interruption), Lithium PRE END is selected with "L".
44	P12/INT2	$\overline{\text{LANC PWR ON}}$	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Not used.
46	P20/PT00	VTR DD ON	O	PS	VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	$\overline{\text{VIDEO D/A CS}}$	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse.
49	P23/BUZ	BEEP	O		Buzzer output. Normally "L". 2 kHz pulse: alarm.
50	P30/LCDCL	$\overline{\text{VIDEO CS}}$	O	VA	Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse.
51	P31/SYNC	$\overline{\text{VTR COSM CS}}$	O		Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse.
52	P32	$\overline{\text{SG CS}}$	O	CAM	Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse.
53	P33	$\overline{\text{CRTC CS}}$	O	CAM	Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			N.C.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KK0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KP5	K IN 5	I	all	
66	P72/KP6	K IN 6	I	all	
67	P73/KP7	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment lock switch input. "L": Lock.
68	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O		N.C.
70	S1	S1	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
71	S2	S2	O		
72	S3	S3	O		
73	S4	S4	O		
74	S5	S5	O		
75	S6	S6	O		
76	S7	S7	O		
77	S8	S8	O		
78	S9	S9	O		
79	S10	S10	O		
80	S11	S11	O		

Pin No.	Port Name	Signal	I/O	Connection	Function
43	P11/INT1	$\overline{\text{LI PRE END}}$	I		(Edge detection vector interruption). Lithium PRE END is selected with "L".
44	P12/INT2	$\overline{\text{LANC PWR ON}}$	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Not used.
46	P20/PT00	VTR DD ON	O	PS	VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, -9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	$\overline{\text{VIDEO D/A CS}}$	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse.
49	P23/BUZ	BEEP	O		Buzzer output. Normally "L". 2 kHz pulse: alarm.
50	P30/LCDCL	$\overline{\text{VIDEO CS}}$	O	VA	Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse.
51	P31/SYNC	$\overline{\text{VTR COSM CS}}$	O		Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse.
52	P32	$\overline{\text{SG CS}}$	O	CAM	Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse.
53	P33	$\overline{\text{CRTC CS}}$	O	CAM	Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			N.C.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KR0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KR5	K IN 5	I	all	
66	P72/KR6	K IN 6	I	all	
67	P73/KR7	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment lock switch input. "L": Lock.
68	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O		N.C.
70	S1	S1	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
71	S2	S2	O		
72	S3	S3	O		
73	S4	S4	O		
74	S5	S5	O		
75	S6	S6	O		
76	S7	S7	O		
77	S8	S8	O		
78	S9	S9	O		
79	S10	S10	O		
80	S11	S11	O		

3-13. AUDIO BLOCK DIAGRAM


AU-138 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2) (VS-95)
PB RF
REC AFM RF
CN602
Y TRAP
RF AGC
AGC DET
BPF
LIM
DOC DET
PHASE COMP (FM DEMOD)
LPF
MUTE DET
S/H
DO
NOR
PG DOBUL DELAY
MUTE OFF DELAY
1.5 DEV
REC ON
VCO (FM MOD)
CCA
PB
REC
1/M
PHASE COMP
1/N
NTSC/PAL
AUDIO 5V (CN602 22, 25)
Vcc
RF SWP
VA PB MODE
SP/LP
AUDIO FADER
Z
LP
SP
FADE
AGC
AGC DET
LINE
CAM
MUTE
AUDIO MUTE
LINE AMP
MOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
LPF
BPF
FILTER CONTROL
VCO
EMP 2
I REF
V REF
1.5/1.7
1.5 IR
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1) (VS-95)
CN601
(See Page 126)
MA-149 BOARD
Q551
LOW-CUT FILTER
CN522
MIC
J551
MIC
IC551
MIC AMP
Vcc
MIC Vcc
W551
AUDIO OUT
W517
CN101
VS-95 BOARD
(See Page 104, 107)
W517
J517
AUDIO OUT
(See Page 117)
JK-91 BOARD
AUDIO MUTE
SP/LP
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-95)
SERVO (VS-95)

3-14. EVF BLOCK DIAGRAM

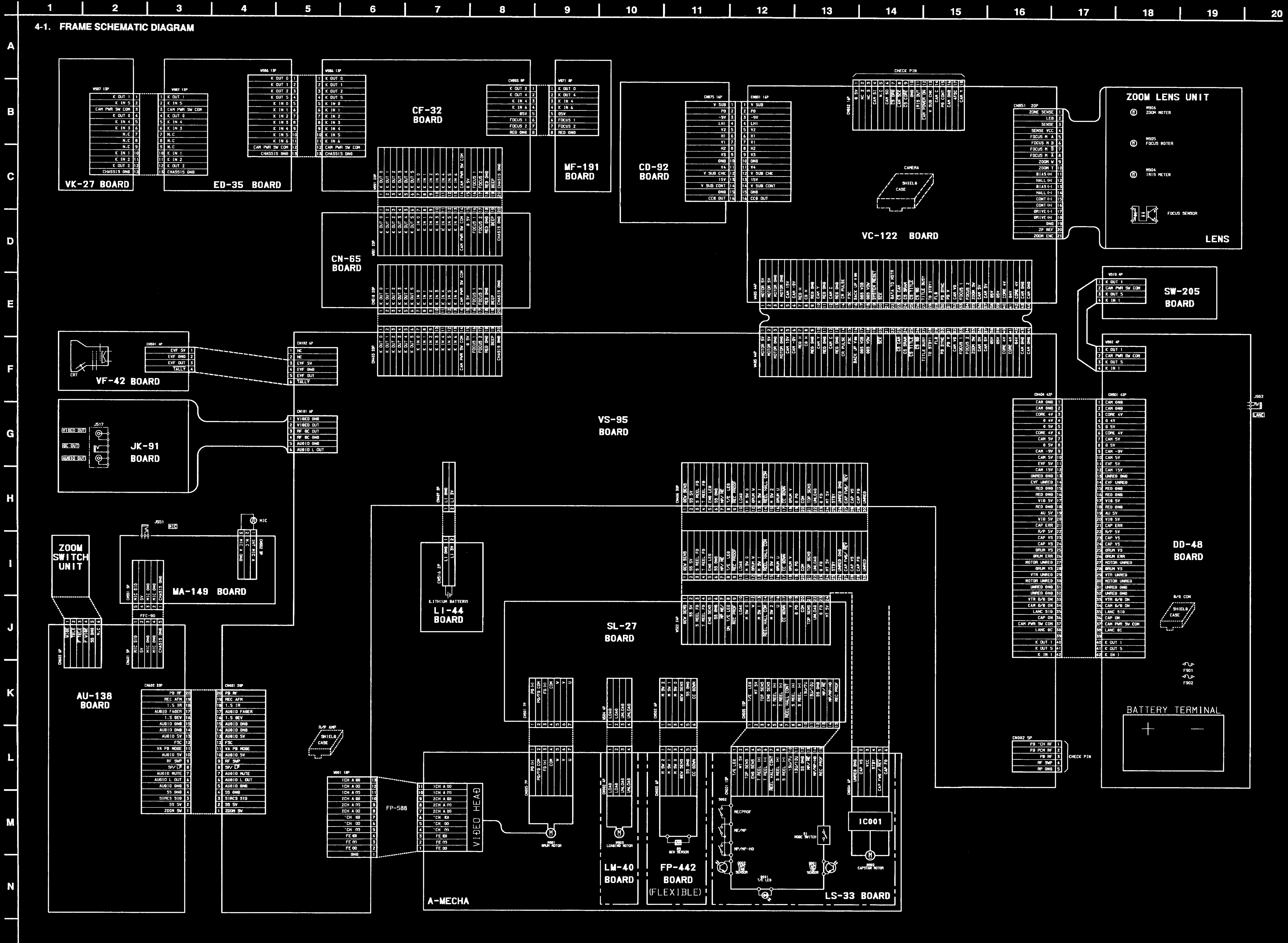

13Vp-p
H
Q501 E REC
Q501 E PB
VF-42 BOARD
(See Page 131)
1Vp-p
IC501 11 REC
IC501 11 PB
EVF 5V
D502 TALLY
D501 TALLY
SYSCON (VS-95) TALLY
VIDEO (1) (VS-95) EVF OUT
CN501
IC501
RV501 H FREQ
RV503 CONTRAST
Q502 VIDEO DRIVE
Q501 VIDEO OUT
2.8Vp-p
IC501 16 REC/PB
Q504 H OUT
C504 H SIZE
Q503 HOLD DOWN
EVF 5V
T501 FBT
D503 DUMPER
RV504 BRIGHT
W501
G1
G2
H
HV
V901 PICTURE TUBE
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
EVF 5V
RV502 V SIZE
3Vp-p
IC501 13 REC/PB
CN502
CN503
DH2
DH1
DV2
DV1
L503 HLC
L901 DEFLECTION YOKE
09
2.6Vp-p
V
IC501 5 REC/PB
IC501 3 REC/PB

3-15. POWER BLOCK DIAGRAM

(See Page 137)
SW-205 BOARD
(See Page 118)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
(See Page 119)
SL-27 BOARD
IC521
DD-48 BOARD
(See Page 137)
IC901
DC/DC CONVERTER/ AFC,CAPSTAN,DRUM PWM DRIVE
J901 BATTERY TERMINAL
TRIANGLE OSC
SWITCHING DRIVE
VOLTAGE ERROR AMP
SHORT CIRCUIT DETECT
POWER
SHORT CIRCUIT PROTECT
CAPSTAN/DRUM PWM DRIVE (SERVO)
T901
IC405
IC406
IC408
IC404
EEP ROM
CHARACTER GENERATOR
DRUM MOTOR DRIVE
ATF SERVO CLOG DETECT PB SP/LP DETECT
VS-95 BOARD
(See Page 100, 104, 107)
IC410
LOADING MOTOR DRIVE
IC402
IC407
SIRCS CONTROL
IC409
LANC I/O
IC401
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
IC403
MODE CONTROL
J902 REMOTE
(See Page 115)
CN-65 BOARD
(See Page 115)
CF-32 BOARD
(See Page 116)
MF-191 BOARD
ED-35 BOARD
(See Page 116)
(See Page 117)
VK-27 BOARD
LI-44 BOARD
(See Page 117)
LITHIUM BATTERY
IC001
IC003
IC151
IC152
IC154
IC156
IC158
IC159
JK-91 BOARD
(See Page 117)
J517 RF OUT
AU-138 BOARD
(See Page 125)
IC601
IC602
MA-149 BOARD
(See Page 126)
IC551
(See Page 131)
ELECTRIC VIEW FINDER
IC501
VF-42 BOARD
VC-122 BOARD
(See Page 85, 88, 92)
(See Page 79)
CD-92 BOARD
IC875
IC804
IC801
IC805
IC803
IC802
IC706
IC702
IC704
IC705
IC707
IC709
IC712
IC851
IC852
IC856
IC853
IC854
(See Page 94)
LENS BLOCK

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


VK-27 BOARD
ED-35 BOARD
CF-32 BOARD
MF-191 BOARD
CD-92 BOARD
VC-122 BOARD
ZOOM LENS UNIT
M906 ZOOM MOTER
M905 FOCUS MOTER
M904 IRIS METER
FOCUS SENSOR
LENS
CAMERA
SHIELD CASE
CHECK PIN
CN-65 BOARD
SW-205 BOARD
VF-42 BOARD
CRT
JK-91 BOARD
VIDEO OUT
RF DC OUT
AUDIO OUT
VS-95 BOARD
ZOOM SWITCH UNIT
MA-149 BOARD
MIC
LI-44 BOARD
LITHIUM BATTERY
SL-27 BOARD
DD-48 BOARD
D/D CON SHIELD CASE
AU-138 BOARD
R/P AMP SHIELD CASE
FP-588
VIDEO HEAD
A-MECHA
M901 DRUM MOTOR
M903 LOADING MOTOR
LM-40 BOARD
FP-442 BOARD (FLEXIBLE)
DEW SENSOR
REC/PROOF
MODE SWITCH
T/C LED
IC001
M902 CAPSTAN MOTOR
LS-33 BOARD
BATTERY TERMINAL
F901
F902
+
—

FRAME FRAME

FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole.

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μ μF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- —— : B+ Line.*
- – – – : B– Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

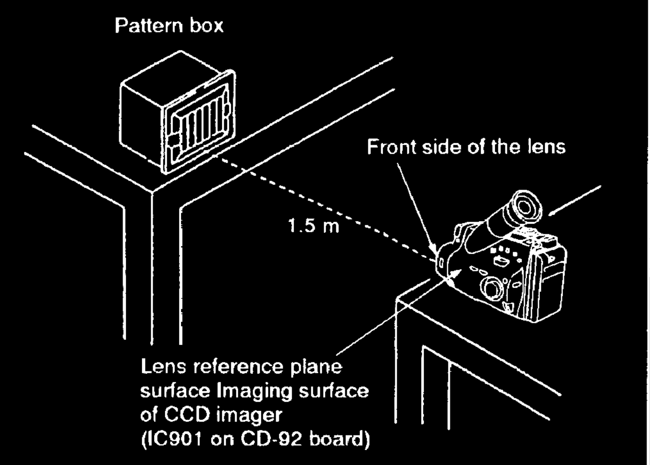
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-92 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

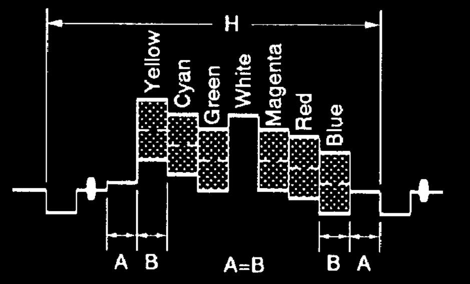

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

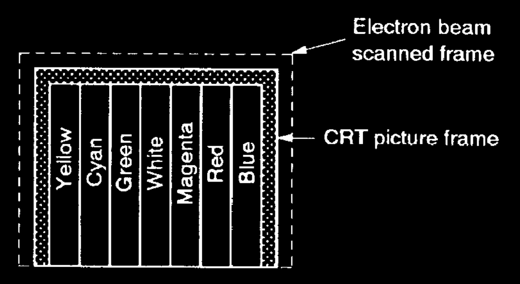

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

CD-92 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-92 BOARD: 1000 series —

- **For printed wiring boards.**
- CD-92 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

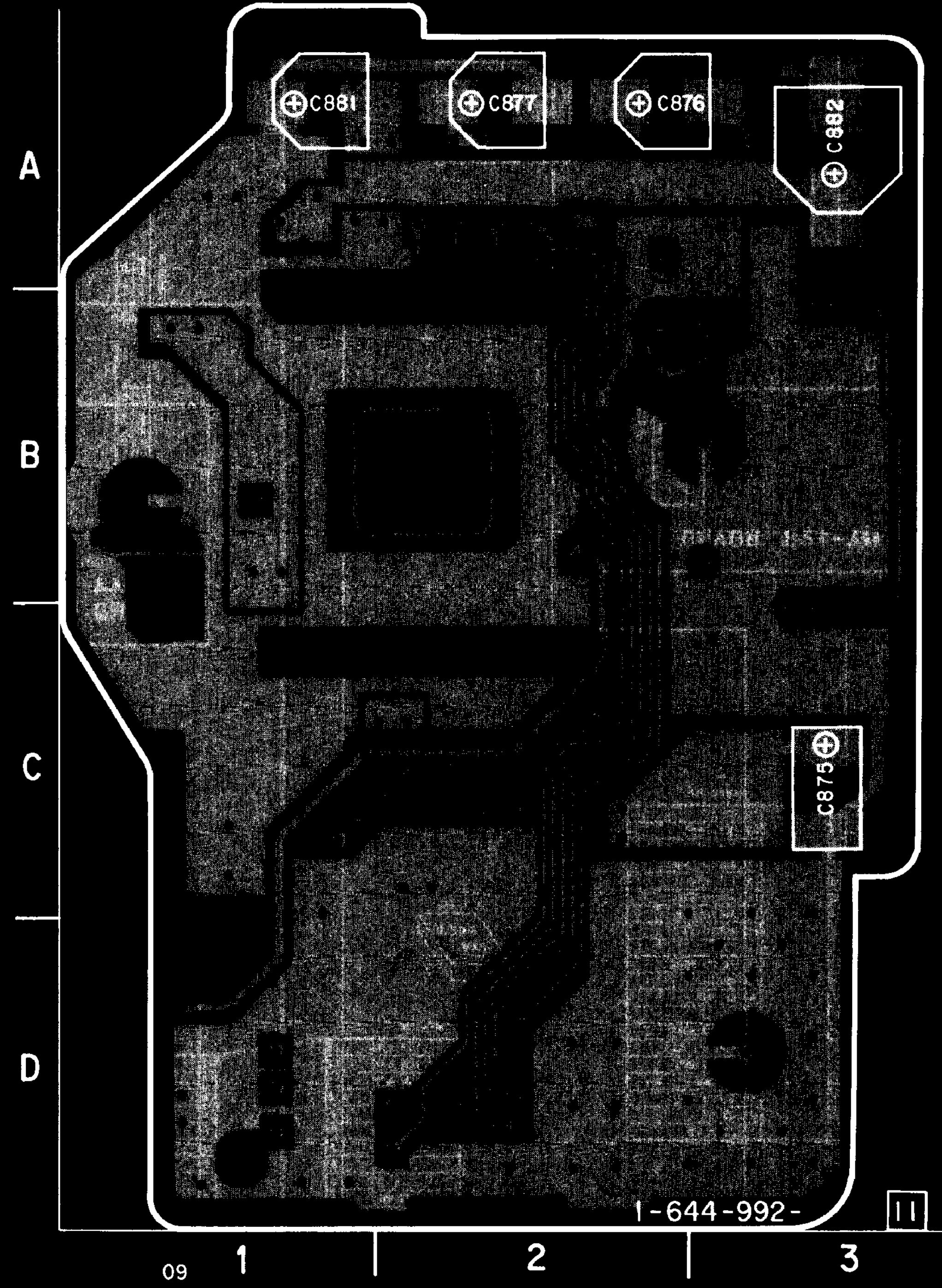
〈 DIODE 〉

D875	8-719-800-76	DIODE	1SS226
D876	8-719-404-46	DIODE	MA110
D877	8-719-820-05	DIODE	1SS181
D878	8-719-404-46	DIODE	MA110

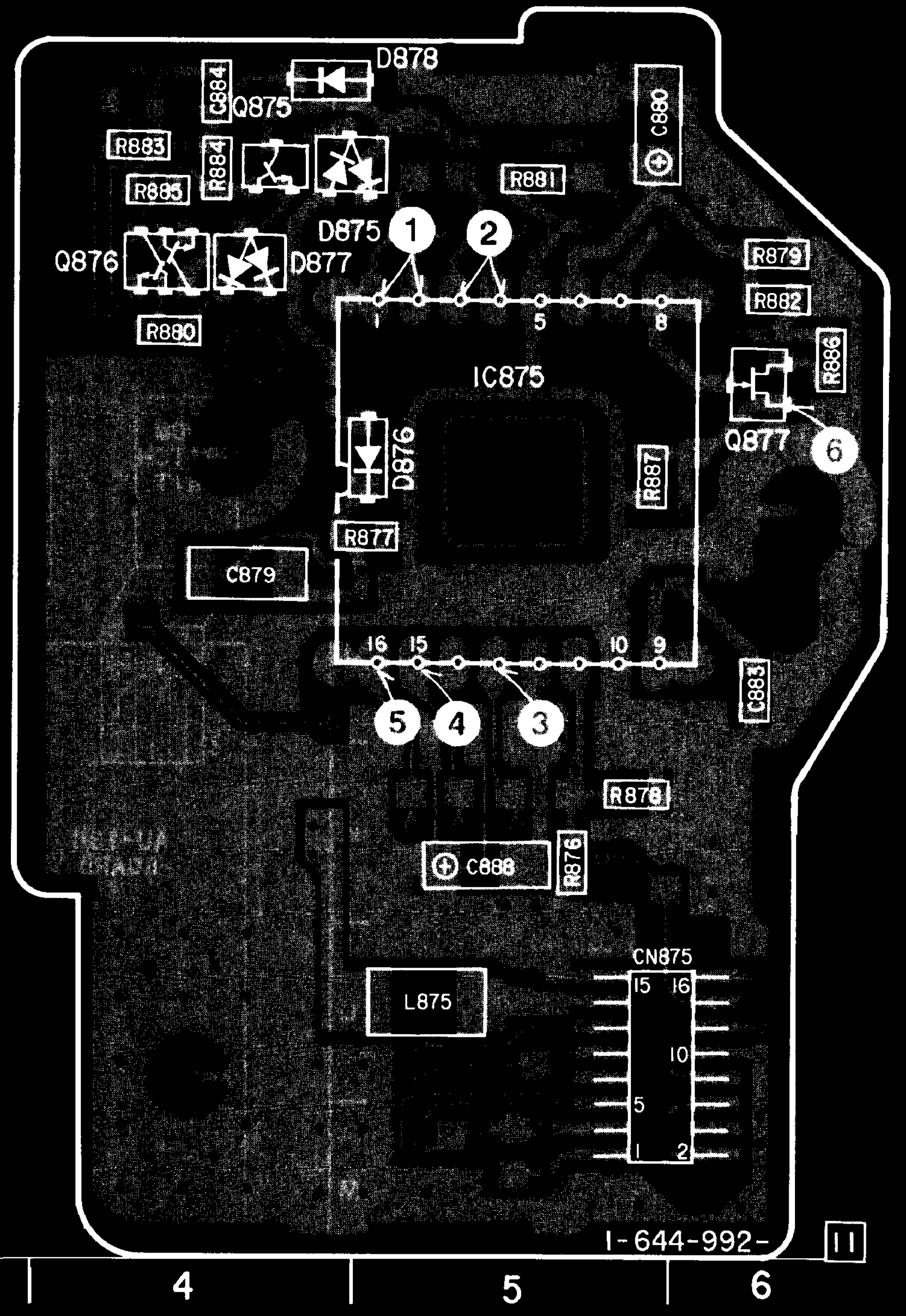
〈 TRANSISTOR 〉

Q875	8-729-425-64	TRANSISTOR	2SD2216Q
Q876	8-729-427-72	TRANSISTOR	XP4501
Q877	8-729-232-86	TRANSISTOR	2SK1875

CD-92 BOARD (COMPONENT SIDE)

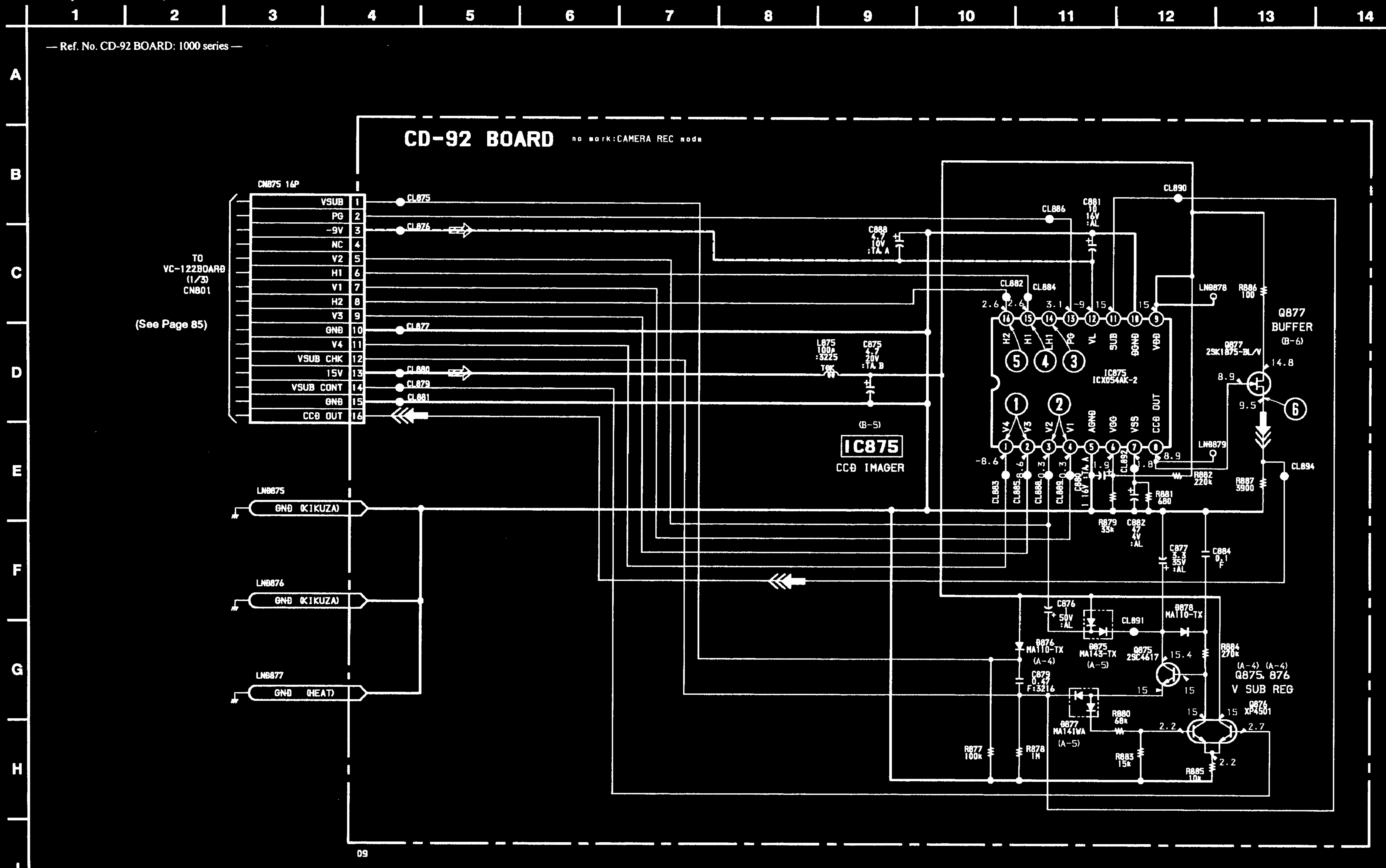

A
B
C
D
C881
C877
C876
C882
C875
1-644-992-
11
09
1
2
3

CD-92 BOARD (CONDUCTOR SIDE)


D878
C884
Q875
R883
R884
R885
R881
C880
D875
Q876
D877
R879
R882
R880
IC875
R886
Q877
D876
R887
R877
C879
C883
R878
C888
R876
CN875
L875
1
5
8
16
15
10
9
①
②
③
④
⑤
⑥
1-644-992-
11
4
5
6

CD-92 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-92 BOARD: 1000 series —


1
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22
A
B
C
D
E
F
G
H
I
J
CD-92 BOARD
no mark:CAMERA REC mode
CN875 16P
TO
VC-122BOARD
(1/3)
CN801
(See Page 85)
VSUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
VSUB CHK 12
15V 13
VSUB CONT 14
GND 15
CCD OUT 16
CL875
CL876
CL877
CL880
CL879
CL881
LN8875
GND (KIKUZA)
LN8876
GND (KIKUZA)
LN8877
GND (HEAT)
C888 4.7 10V :TA A
L875 100µ :3225 TOK
C875 4.7 20V :TA B
(B-5)
IC875
CCD IMAGER
CL886
C881 10 16V :AL
CL890
CL882
CL884
H2
H1
LH1
PG
VL
SUB
BGND
VDD
IC875 ICX054AK-2
V4
V3
V2
V1
AGND
VGG
VSS
CCD OUT
2.6
2.6
3.1
-9
15
15
-8.6
-8.6
0.3
0.3
1.9
1.8
8.9
CL883
CL885
CL888
CL889
C880 1 16V :TA A
CL892
R882 220k
R881 680
R879 33k
C882 47 4V :AL
LN8878
R886 100
Q877 BUFFER (B-6)
Q877 2SK1875-BL/V
14.8
8.9
9.5
LN8879
R887 3900
CL894
C877 3.3 35V :AL
C884 0.1 F
C876 1 50V :AL
D875 MA143-TX (A-5)
CL891
D878 MA110-TX
D876 MA110-TX (A-4)
Q875 2SC4617
15.4
R884 270k
C879 0.47 F:3216
15
15
(A-4) (A-4)
Q875, 876
V SUB REG
D877 MA141WA (A-5)
R880 68k
15
15
Q876 XP4501
2.2
2.7
R883 15k
R885 10k
2.2
R877 100k
R878 1M
09

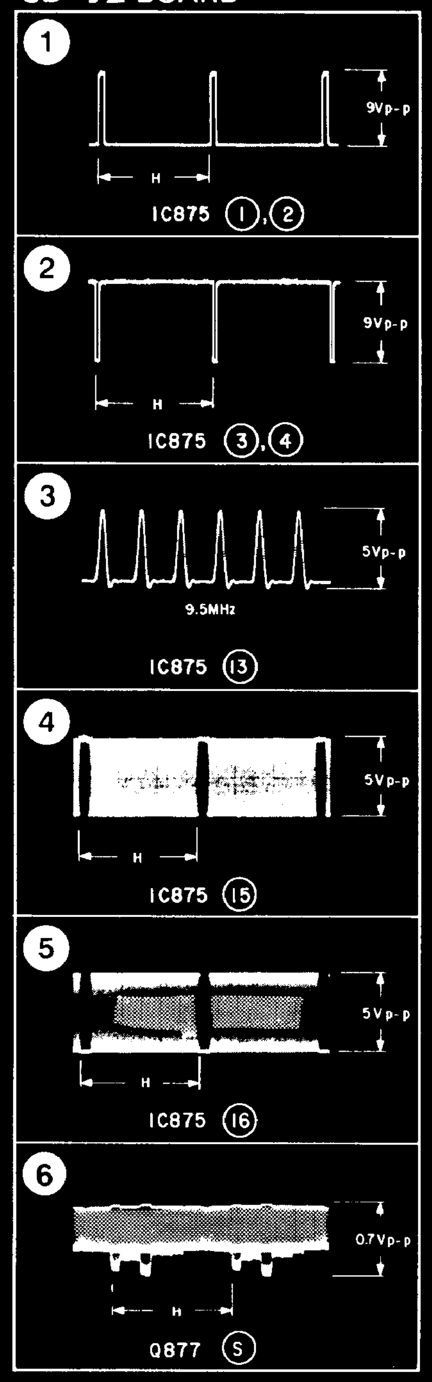
Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	
PB				

CD-92 BOARD



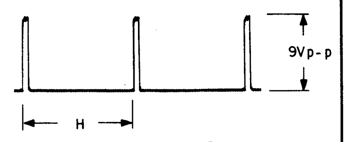
Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

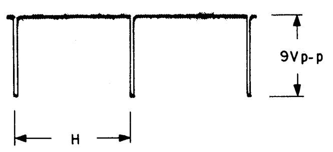
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	
PB				

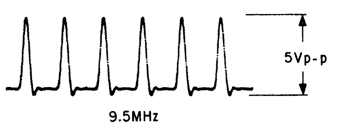
CD-92 BOARD

❶


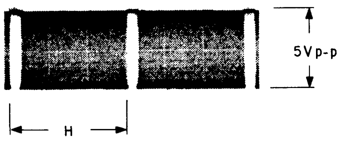
IC875 ①,②

❷


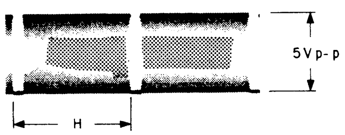
IC875 ③,④

❸


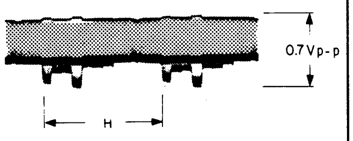
IC875 ⑬

❹


IC875 ⑮

❺


IC875 ⑯

❻


Q877 Ⓢ

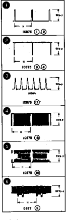
Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	
PB				

CD-92 BOARD



VC-122 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-122 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-122 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

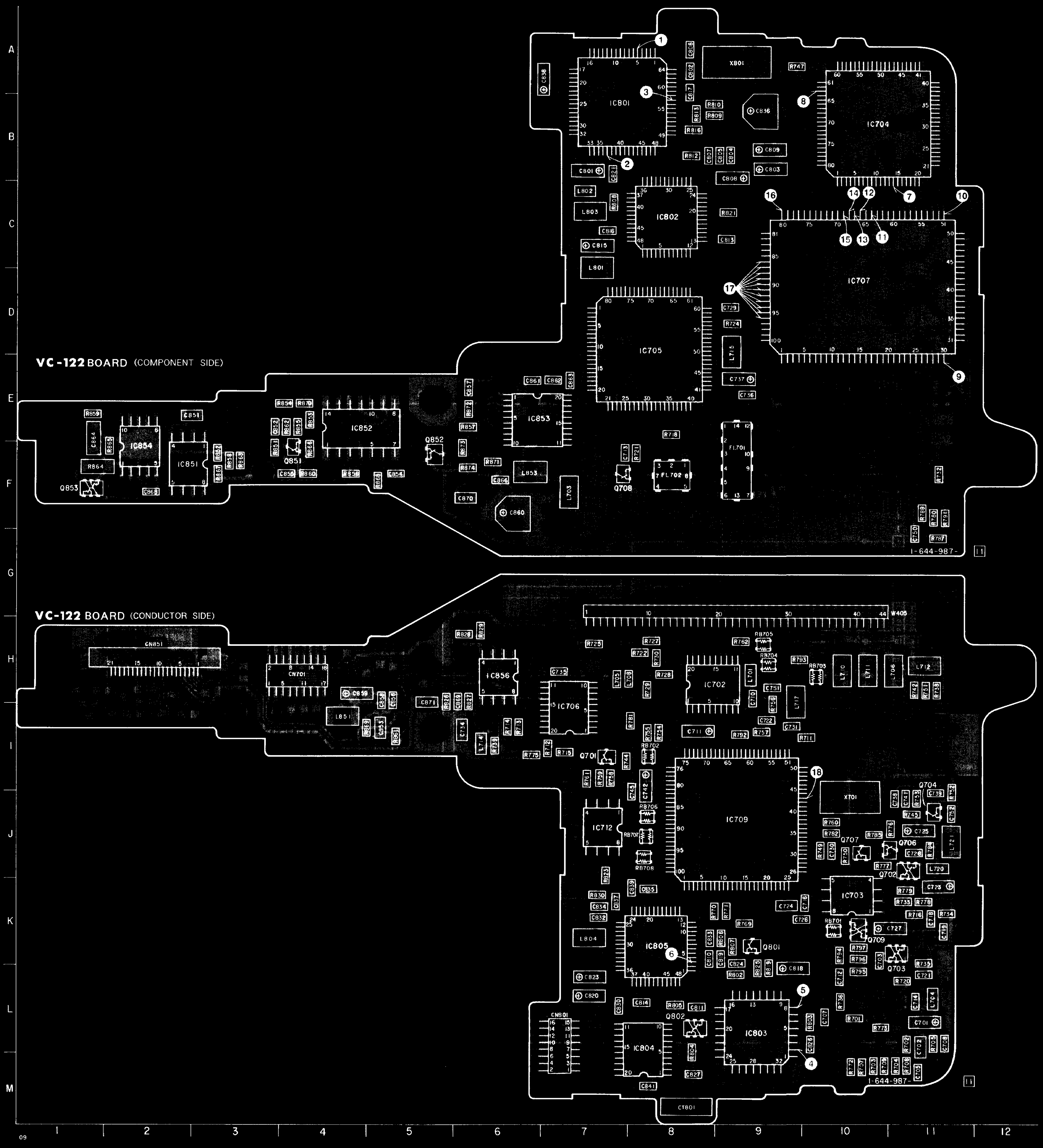
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

〈 IC 〉

IC702	8-759-064-36	IC	MB88346BPFV-EF
IC703	8-759-710-07	IC	NJM2234M
IC704	8-752-348-92	IC	CXD2101AR
IC705	8-759-063-18	IC	CXD2103AR
IC706	8-752-355-56	IC	CXD2104BN
IC707	8-752-344-53	IC	CXD2100Q
IC709	8-752-839-80	IC	CXP80624-424R
IC712	8-759-073-67	IC	BR9021AF
IC801	8-752-350-16	IC	CXD1257AR
IC802	8-752-056-39	IC	CXA1507BR
IC803	8-752-053-26	IC	CXA1399Q
IC804	8-752-327-48	IC	CXD1250N
IC805	8-752-054-61	IC	CXA1390AR
IC851	8-759-701-24	IC	NJM3414M-TE1
IC852	8-759-998-96	IC	LM324D
IC853	8-759-058-47	IC	MPC1724VMEL
IC854	8-759-823-51	IC	LB1830M
IC856	8-759-998-98	IC	LM358D

〈 TRANSISTOR 〉

Q701	8-729-928-87	TRANSISTOR	DTC124EE
Q702	8-729-427-74	TRANSISTOR	XP4601
Q703	8-729-427-74	TRANSISTOR	XP4601
Q704	8-729-425-50	TRANSISTOR	2SB1462Q
Q706	8-729-425-64	TRANSISTOR	2SD2216Q
Q707	8-729-428-84	TRANSISTOR	UN9111
Q708	8-729-425-64	TRANSISTOR	2SD2216Q
Q709	8-729-427-72	TRANSISTOR	XP4501
Q801	8-729-425-64	TRANSISTOR	2SD2216Q
Q802	8-729-427-70	TRANSISTOR	XP4401
Q851	8-729-425-64	TRANSISTOR	2SD2216Q
Q852	8-729-013-88	TRANSISTOR	RN1302
Q853	8-729-427-70	TRANSISTOR	XP4401


VC-122 BOARD (COMPONENT SIDE)
VC-122 BOARD (CONDUCTOR SIDE)
A
B
C
D
E
F
G
H
I
J
K
L
M
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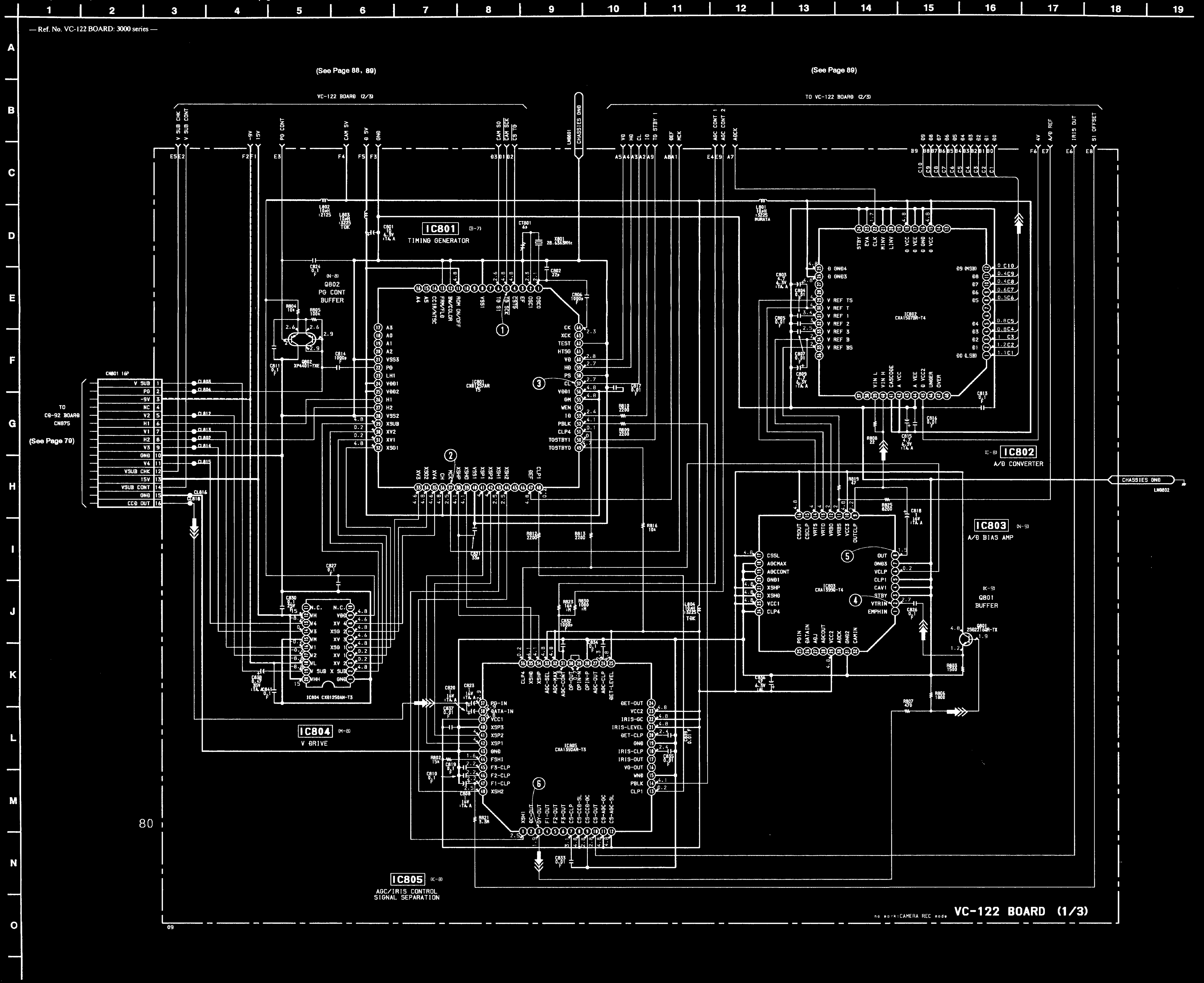
11
12
IC801
IC802
IC704
IC707
IC705
IC853
IC852
IC851
IC854
IC856
IC706
IC702
IC709
IC712
IC703
IC805
IC804
IC803
X801
X701
CN851
CN701
CN801
CT801
W405
FL701
FL702
Q701
Q702
Q703
Q704
Q706
Q707
Q708
Q709
Q801
Q802
Q851
Q852
Q853
1-644-987-
11

VC-122 (CAMERA) SCHEMATIC DIAGRAM

- Refer to page 82 for Printed Wiring Board.

— Ref. No. VC-122 BOARD: 3000 series —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16
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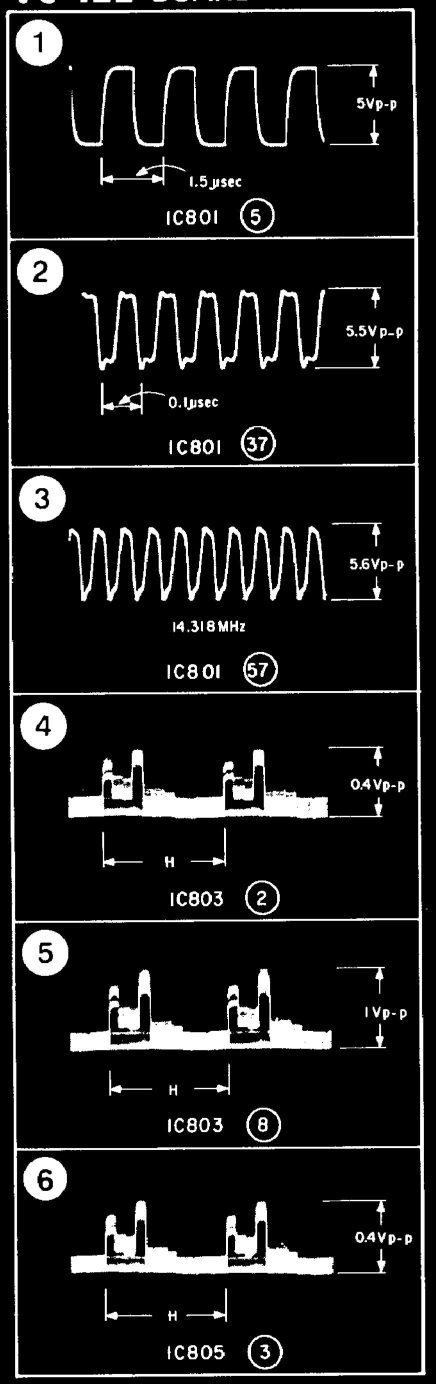
19
(See Page 88, 89)
VC-122 BOARD (2/3)
(See Page 89)
TO VC-122 BOARD (2/3)
IC801
TIMING GENERATOR
Q802
PG CONT
BUFFER
IC802
A/D CONVERTER
IC803
A/D BIAS AMP
Q801
BUFFER
IC804
V DRIVE
IC805
AGC/IRIS CONTROL
SIGNAL SEPARATION
TO
CG-92 BOARD
CN875
(See Page 79)
CN801 16P
CHASSIES GND
80
VC-122 BOARD (1/3)

- SIGNAL PATH

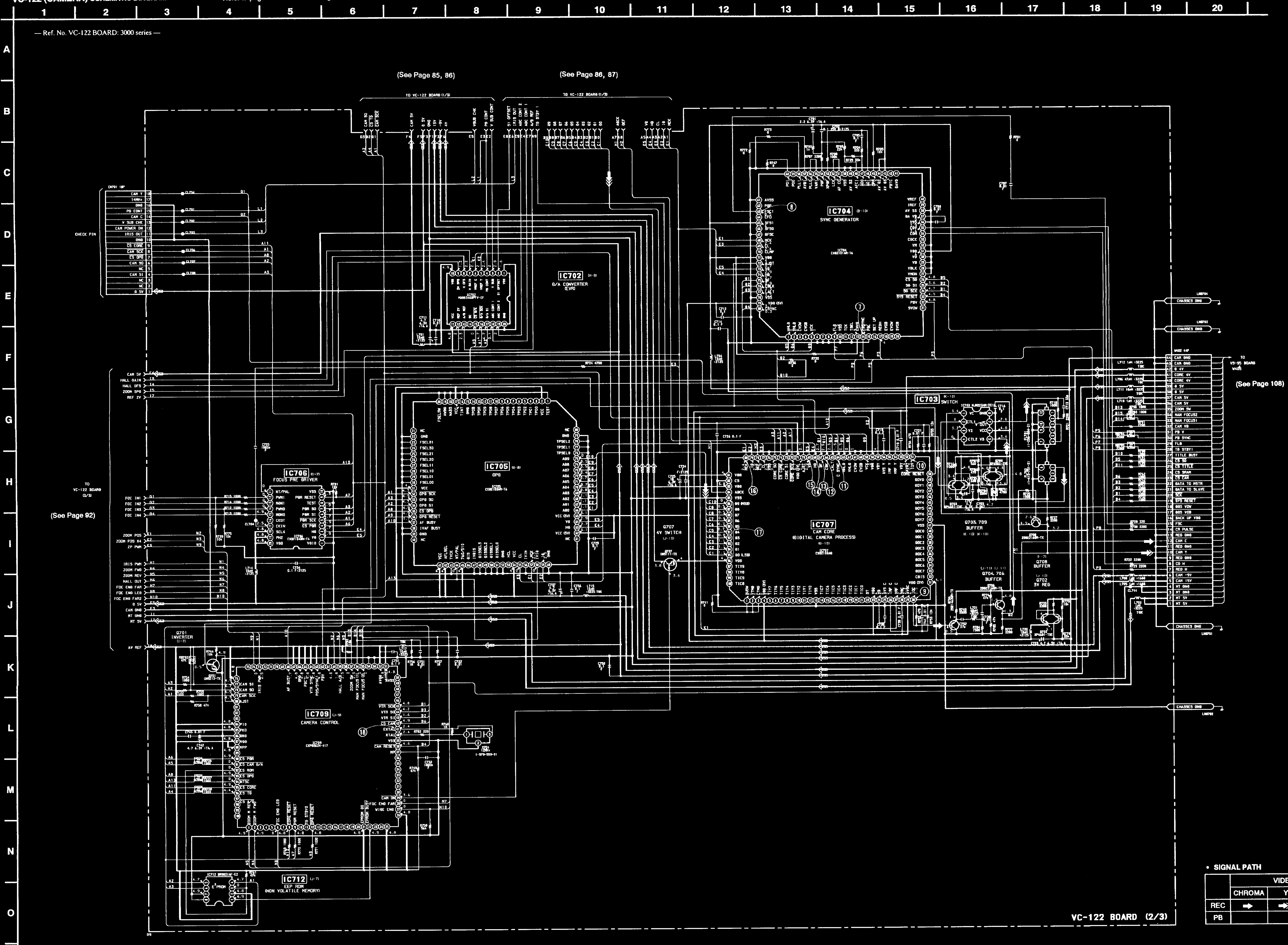
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			⇛	
PB				

VC-122 BOARD (1/3)



VC-122 (CAMERA) SCHEMATIC DIAGRAM

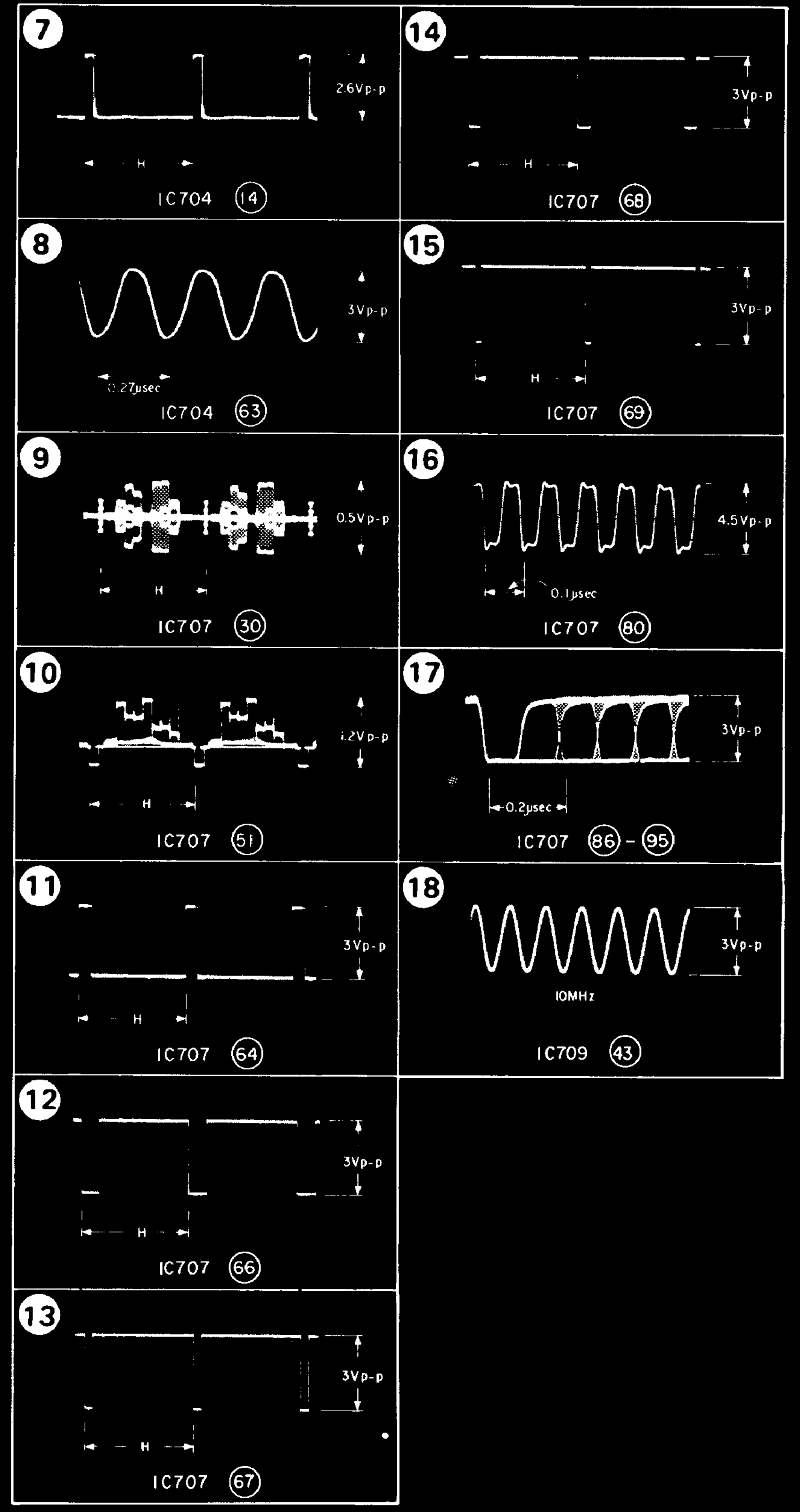
- Refer to page 82 for Printed Wiring Board.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
A B C D E F G H I J K L M N O
— Ref. No. VC-122 BOARD: 3000 series —
(See Page 85, 86)
(See Page 86, 87)
TO VC-122 BOARD (1/3)
CHECK PIN
TO VC-122 BOARD (3/3)
(See Page 92)
IC704 SYNC GENERATOR
IC702 D/A CONVERTER (EVR)
IC703 SWITCH
IC705 (E-8) OPB
IC705 CXD2103AR-T6
IC706 FOCUS PRE DRIVER
IC707 CAM CORE (DIGITAL CAMERA PROCESS)
IC709 CAMERA CONTROL
IC712 EEP ROM (NON VOLATILE MEMORY)
Q701 INVERTER
Q707 4V SWITCH
Q703, 709 BUFFER (K-10) (K-10)
Q704, 706 BUFFER (J-11) (J-11)
Q708 BUFFER (F-7)
Q702 3V REG (J-10)
TO VS-95 BOARD
(See Page 108)
CHASSIS GND
VC-122 BOARD (2/3)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	
PB				

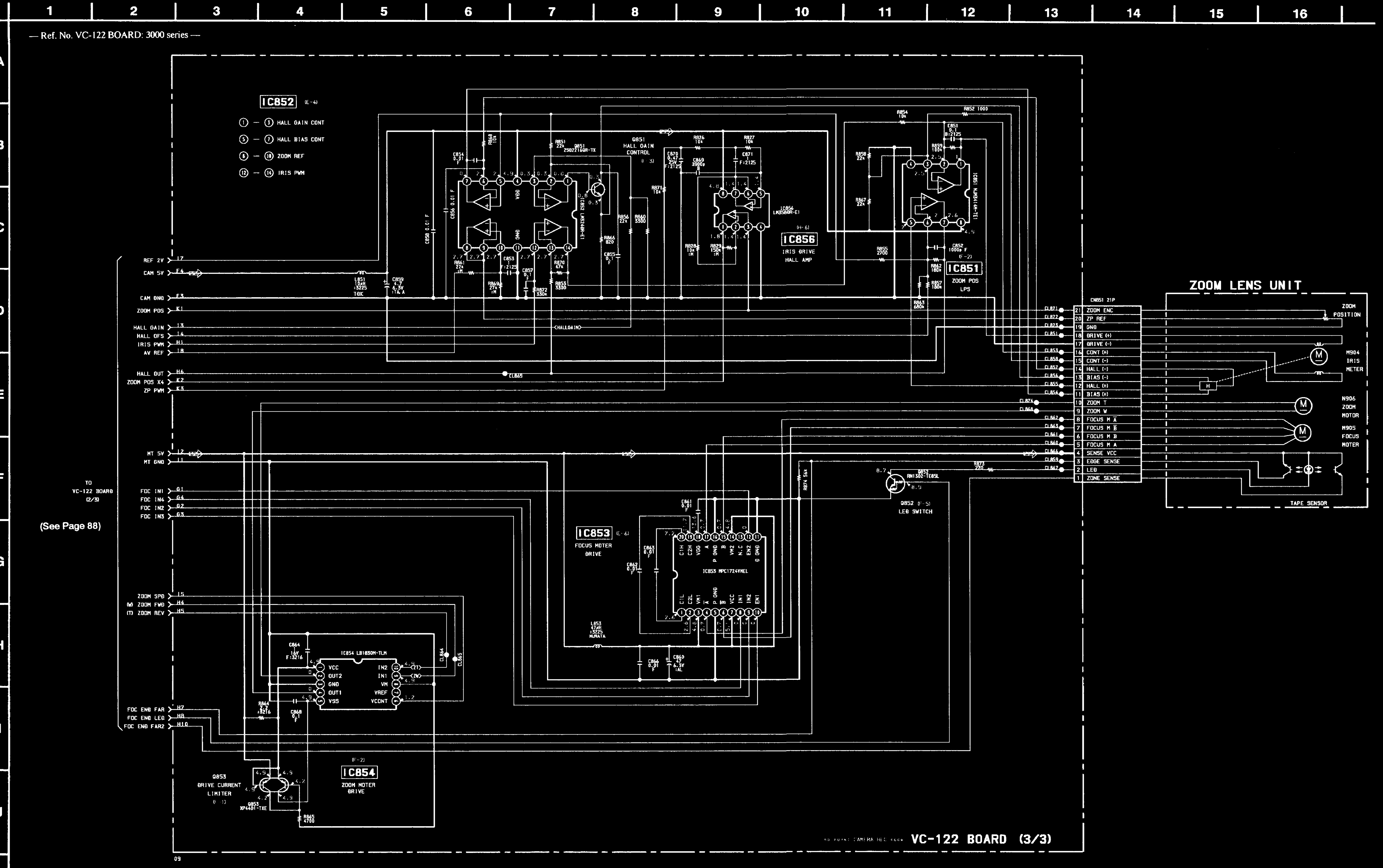
VC-122 BOARD (2/3)



VC-122 (LENS DRIVE) SCHEMATIC DIAGRAM

- Refer to page 82 for Printed Wiring Board.

— Ref. No. VC-122 BOARD: 3000 series —


1
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13
14
15
16
A
B
C
D
E
F
G
H
I
J
IC852 (E-4)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
REF 2V
CAM 5V
CAM GND
ZOOM POS
HALL GAIN
HALL OFS
IRIS PWM
AV REF
HALL OUT
ZOOM POS X4
ZP PWM
MT 5V
MT GND
TO
VC-122 BOARD
(2/3)
FOC IN1
FOC IN4
FOC IN2
FOC IN3
ZOOM SPD
(W) ZOOM FWD
(T) ZOOM REV
FOC END FAR
FOC END LED
FOC END FAR2
IC852 LM324PR-E1
Q851 2SD2216QR-TX
Q851
HALL GAIN
CONTROL
(F-3)
<HALLGAIN>
IC856 LM358DR-E1
(H-6)
IC856
IRIS DRIVE
HALL AMP
IC851 NJM3414M-TE1
(F-2)
IC851
ZOOM POS
LPS
IC853 (E-6)
FOCUS MOTER
DRIVE
IC853 MPC1724VMEL
Q852 RN1302-TE85L
Q852 (F-5)
LED SWITCH
IC854 LB1830M-TLM
(F-2)
IC854
ZOOM MOTER
DRIVE
Q853
DRIVE CURRENT
LIMITER
Q853
XP4401-TXE
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (-)
16 CONT (+)
15 CONT (-)
14 HALL (-)
13 BIAS (-)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M A
7 FOCUS M B
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
ZOOM LENS UNIT
ZOOM
POSITION
M904
IRIS
METER
M906
ZOOM
MOTOR
M905
FOCUS
MOTER
TAPE SENSOR
VC-122 BOARD (3/3)
09

(See Page 88)

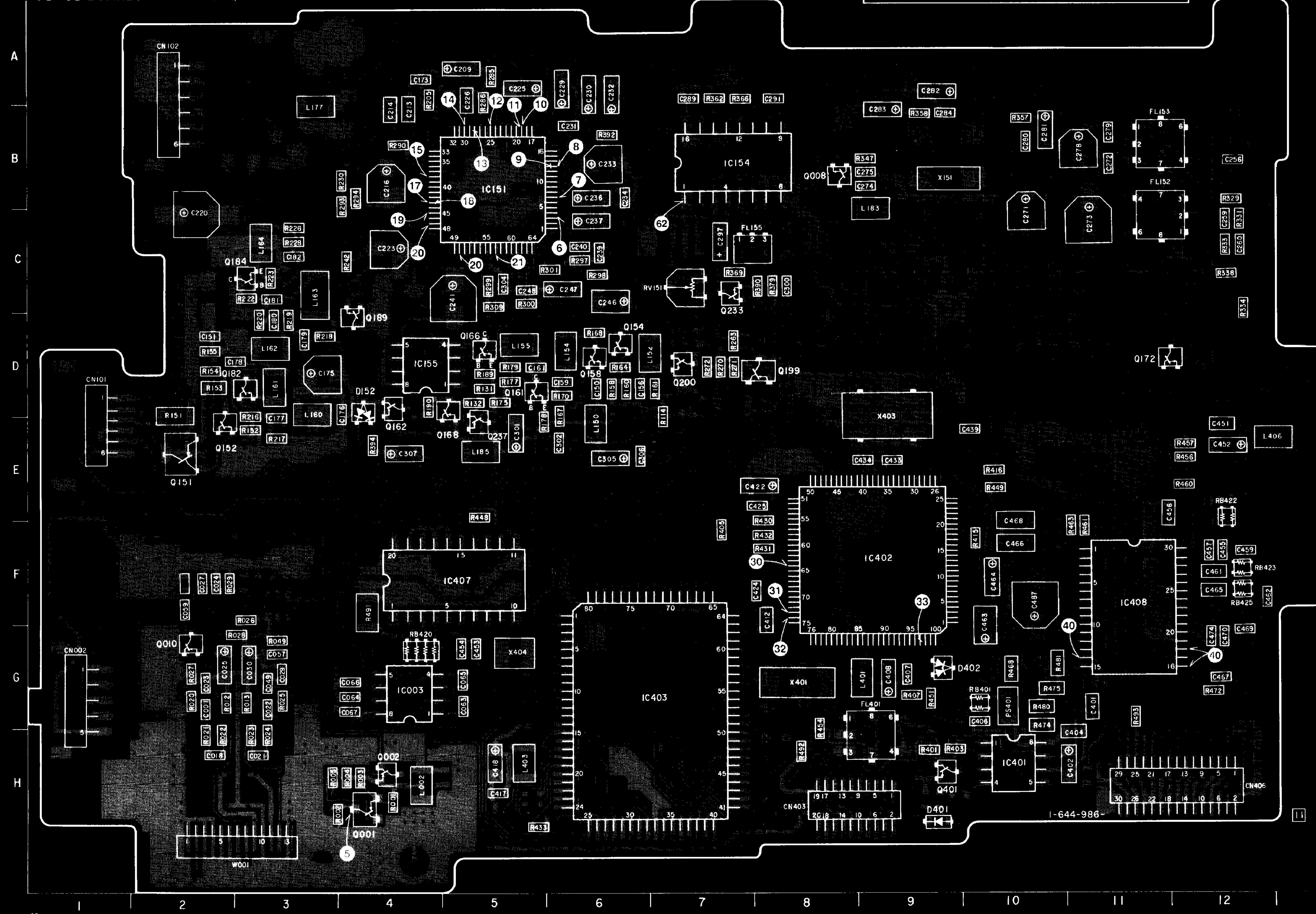
VS-95 (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-95 BOARD: 4000 series —

- **For printed wiring boards.**
- VS-95 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VS-95 BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
IC151
IC154
IC155
IC402
IC403
IC407
IC408
IC003
IC401
X403
X404
X401
CN101
CN002
CN404
CN406
CN407
W001
1-644-986-
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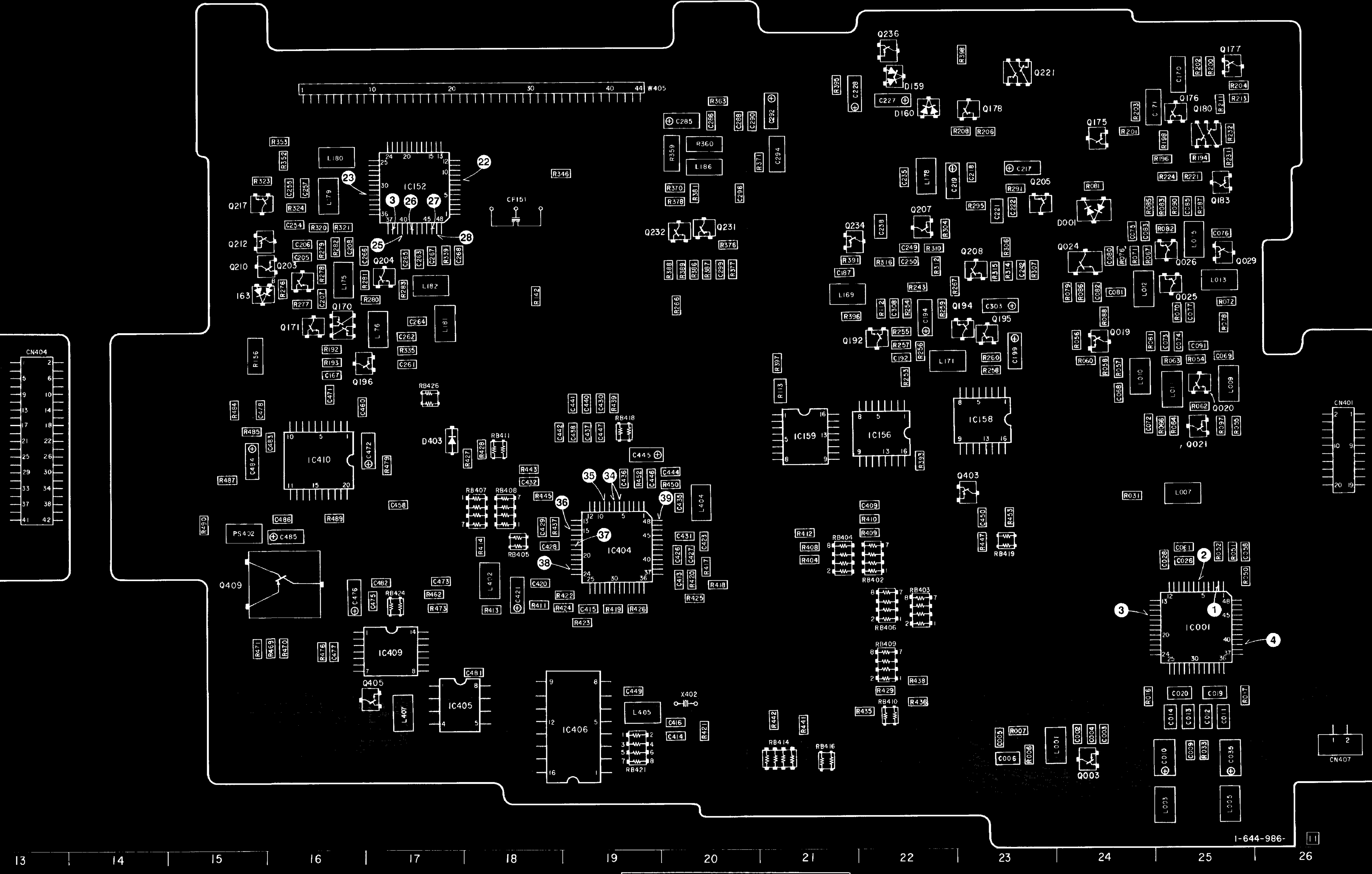
12

VS-95 BOARD(COMPONENT SIDE)


IC152
IC410
IC409
IC405
IC406
IC404
IC159
IC156
IC158
IC001
Q409
CN401
CN407
1-644-986-
13
14
15
16
17
18
19
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22
23
24
25
26

VIDEO VIDEO

VIDEO VIDEO

(DIODE)

D001	8-719-800-76	DIODE	1SS123
D152	8-719-027-48	DIODE	MA142WA
D159	8-719-027-50	DIODE	MA142WK
D160	8-719-027-50	DIODE	MA142WK
D163	8-719-027-50	DIODE	MA142WK
D401	8-719-421-27	DIODE	MA728
D402	8-719-027-50	DIODE	MA142WK-(TX)
D403	8-719-404-46	DIODE	MA110

(IC)

IC001	8-752-033-38	IC	CXA1202R
IC003	8-752-053-21	IC	CXA1211M
IC151	8-752-065-54	IC	CXA1207AR
IC152	8-752-065-56	IC	CXA1208R
IC154	8-752-332-68	IC	CXL5502M
IC155	8-752-053-21	IC	CXA1211M
IC156	8-759-055-82	IC	M62353GP
IC158	8-759-055-82	IC	M62353GP
IC159	8-759-636-33	IC	CXA1452N
IC401	8-759-056-84	IC	S-8420AF
IC402	8-752-836-29	IC	CXP80624-416R
IC403	8-759-073-94	IC	uPD75316GF-295-3B9
IC404	8-759-059-42	IC	CXA1481AR
IC405	8-759-044-78	IC	BR9011BF-RE2
IC406	8-759-081-96	IC	uPD6456GS-620
IC407	8-759-145-63	IC	uPD7564G-540
IC408	8-759-057-60	IC	MCD004BM
IC409	8-759-999-02	IC	TL1596CDB
IC410	8-759-062-02	IC	MPC1720VM

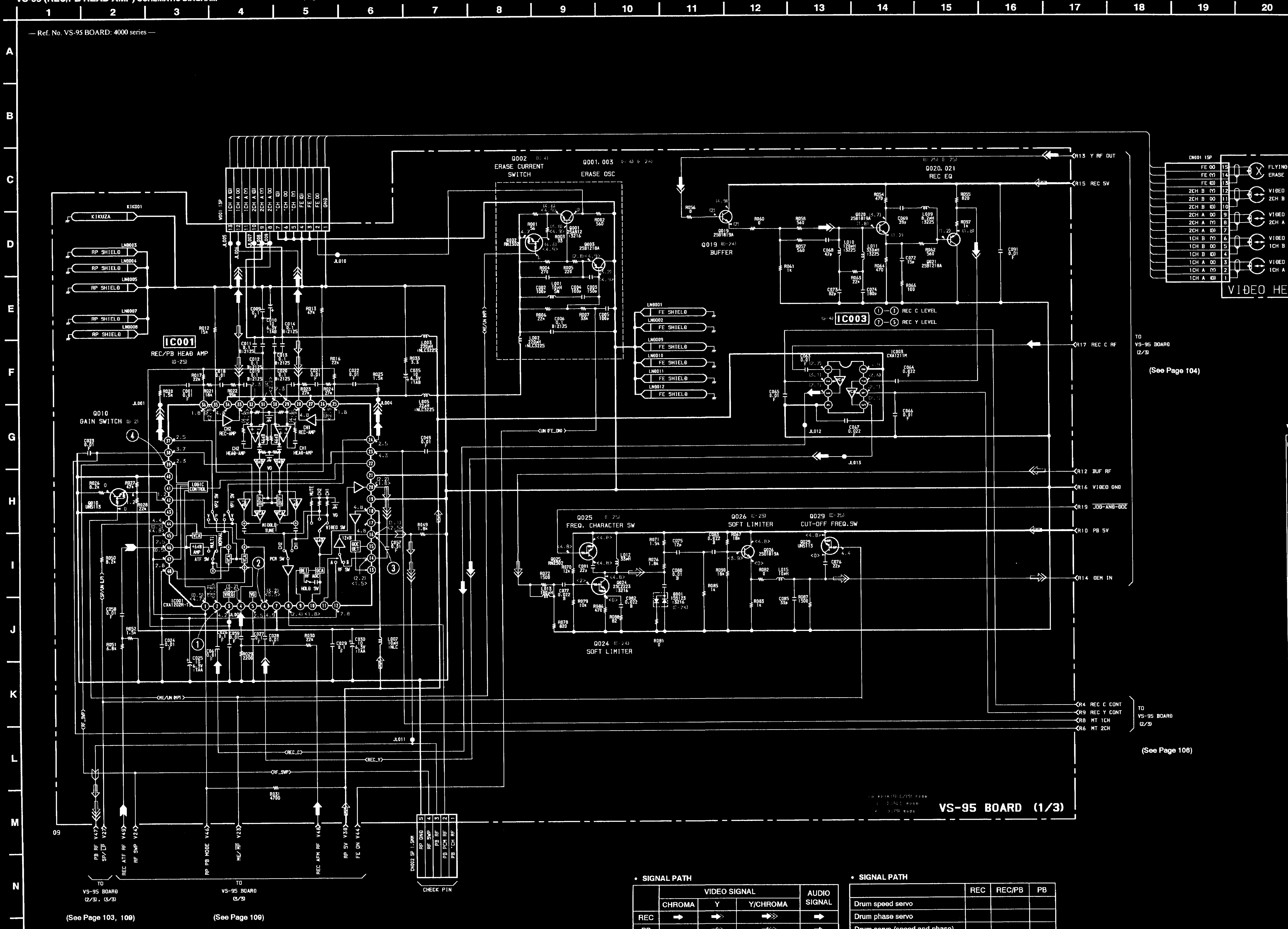
(TRANSISTOR)

Q001	8-729-216-22	TRANSISTOR	2SA812
Q002	8-729-014-16	TRANSISTOR	RN2302
Q003	8-729-402-55	TRANSISTOR	2SB1218A-R
Q008	8-729-402-32	TRANSISTOR	2SD1819A-R
Q010	8-729-403-35	TRANSISTOR	UN5113
Q019	8-729-402-32	TRANSISTOR	2SD1819A-R
Q020	8-729-402-32	TRANSISTOR	2SD1819A-R
Q021	8-729-402-55	TRANSISTOR	2SB1218A-R
Q024	8-729-102-07	TRANSISTOR	2SC2223
Q025	8-729-014-16	TRANSISTOR	RN2302
Q026	8-729-402-32	TRANSISTOR	2SD1819A-R
Q029	8-729-403-35	TRANSISTOR	UN5113
Q151	8-729-101-07	TRANSISTOR	2SB798
Q152	8-729-402-32	TRANSISTOR	2SD1819A-R
Q154	8-729-402-32	TRANSISTOR	2SD1819A-R
Q158	8-729-402-32	TRANSISTOR	2SD1819A-R
Q161	8-729-402-32	TRANSISTOR	2SD1819A-R
Q162	8-729-403-35	TRANSISTOR	UN5113
Q166	8-729-402-55	TRANSISTOR	2SB1218A-R
Q168	8-729-403-35	TRANSISTOR	UN5113
Q170	8-729-420-20	TRANSISTOR	XN4312
Q171	8-729-117-73	TRANSISTOR	2SC4178
Q172	8-729-117-73	TRANSISTOR	2SC4178
Q175	8-729-402-32	TRANSISTOR	2SD1819A-R
Q176	8-729-402-32	TRANSISTOR	2SD1819A-R
Q177	8-729-402-55	TRANSISTOR	2SB1218A-R
Q178	8-729-402-55	TRANSISTOR	2SB1218A-R
Q180	8-729-422-54	TRANSISTOR	XN4215
Q182	8-729-402-32	TRANSISTOR	2SD1819A-R
Q183	8-729-420-53	TRANSISTOR	UN5115
Q184	8-729-402-32	TRANSISTOR	2SD1819A-R
Q189	8-729-402-32	TRANSISTOR	2SD1819A-R
Q192	8-729-402-32	TRANSISTOR	2SD1819A-R
Q194	8-729-402-32	TRANSISTOR	2SD1819A-R
Q195	8-729-402-55	TRANSISTOR	2SB1218A-R
Q196	8-729-403-35	TRANSISTOR	UN5113
Q199	8-729-807-87	TRANSISTOR	2SB1295
Q200	8-729-013-88	TRANSISTOR	RN1302
Q203	8-729-402-55	TRANSISTOR	2SB1218A-R
Q204	8-729-402-32	TRANSISTOR	2SD1819A-R
Q205	8-729-402-42	TRANSISTOR	UN5213
Q207	8-729-403-35	TRANSISTOR	UN5113
Q208	8-729-013-88	TRANSISTOR	RN1302
Q210	8-729-402-42	TRANSISTOR	UN5213
Q212	8-729-402-55	TRANSISTOR	2SB1218A-R
Q217	8-729-402-42	TRANSISTOR	UN5213
Q221	8-729-420-12	TRANSISTOR	XN4213
Q231	8-729-402-55	TRANSISTOR	2SB1218A-R
Q232	8-729-402-32	TRANSISTOR	2SD1819A-R
Q233	8-729-402-32	TRANSISTOR	2SD1819A-R
Q234	8-729-402-55	TRANSISTOR	2SB1218A-R
Q236	8-729-420-56	TRANSISTOR	UN511E
Q237	8-729-425-50	TRANSISTOR	2SB1462Q
Q401	8-729-402-48	TRANSISTOR	UN521E
Q403	8-729-403-35	TRANSISTOR	UN5113
Q405	8-729-013-88	TRANSISTOR	RN1302
Q409	8-729-017-67	TRANSISTOR	2SB1574

VS-95 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

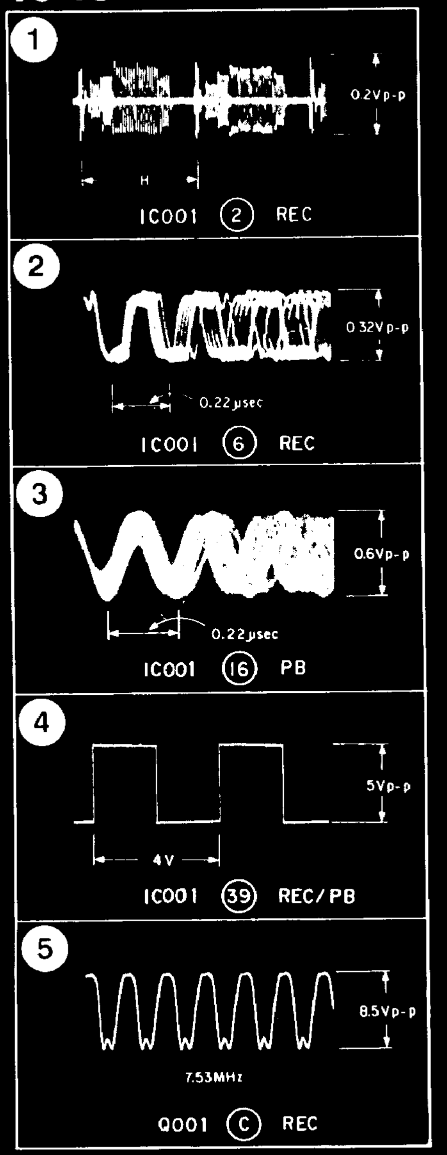
• Refer to page 95 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A B C D E F G H I J K L M N O P
IC001
REC/PB HEAD AMP
IC003
Q002 ERASE CURRENT SWITCH
Q001, 003 ERASE OSC
Q020, 021 REC EQ
Q019 BUFFER
Q010 GAIN SWITCH
Q025 FREQ. CHARACTER SW
Q026 SOFT LIMITER
Q029 CUT-OFF FREQ.SW
Q024 SOFT LIMITER
KIKUZA
RP SHIELD
FE SHIELD
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
LOGIC CONTROL
① - ② REC C LEVEL
⑦ - ⑤ REC Y LEVEL
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
TO VS-95 BOARD (2/3)
(See Page 104)
R12 BUF RF
R16 VIDEO GND
R10 PB 5V
R14 GEN IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-95 BOARD (2/3)
(See Page 108)
CN001 15P
FE (X) 15
FE (Y) 14
FE (G) 13
2CH B (Y) 12
2CH B (X) 11
2CH B (G) 10
2CH A (X) 9
2CH A (Y) 8
2CH A (G) 7
1CH B (Y) 6
1CH B (X) 5
1CH B (G) 4
1CH A (X) 3
1CH A (Y) 2
1CH A (G) 1
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
VIDEO HEAD
<REC_C>
<REC_Y>
<RF_SWP>
R031 4700
09
PB RF V47
SP/LP V27
REC ATF RF V49
RF SWP V24
RP PB MODE V46
ME/MP V23
REC AFM RF V48
RP 5V V38
FE ON V44
TO VS-95 BOARD (2/3), (3/3)
(See Page 103, 109)
TO VS-95 BOARD (3/3)
(See Page 109)
CN002 5P 1.5MM
5 RP GND
4 RF SWP
3 PB RF
2 PB PCM RF
1 PB 'CH RF
CHECK PIN
VS-95 BOARD (1/3)

VS-95 BOARD (1/3)



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡》	➡》》	➡
PB		⇨》	⇨》》	⇨

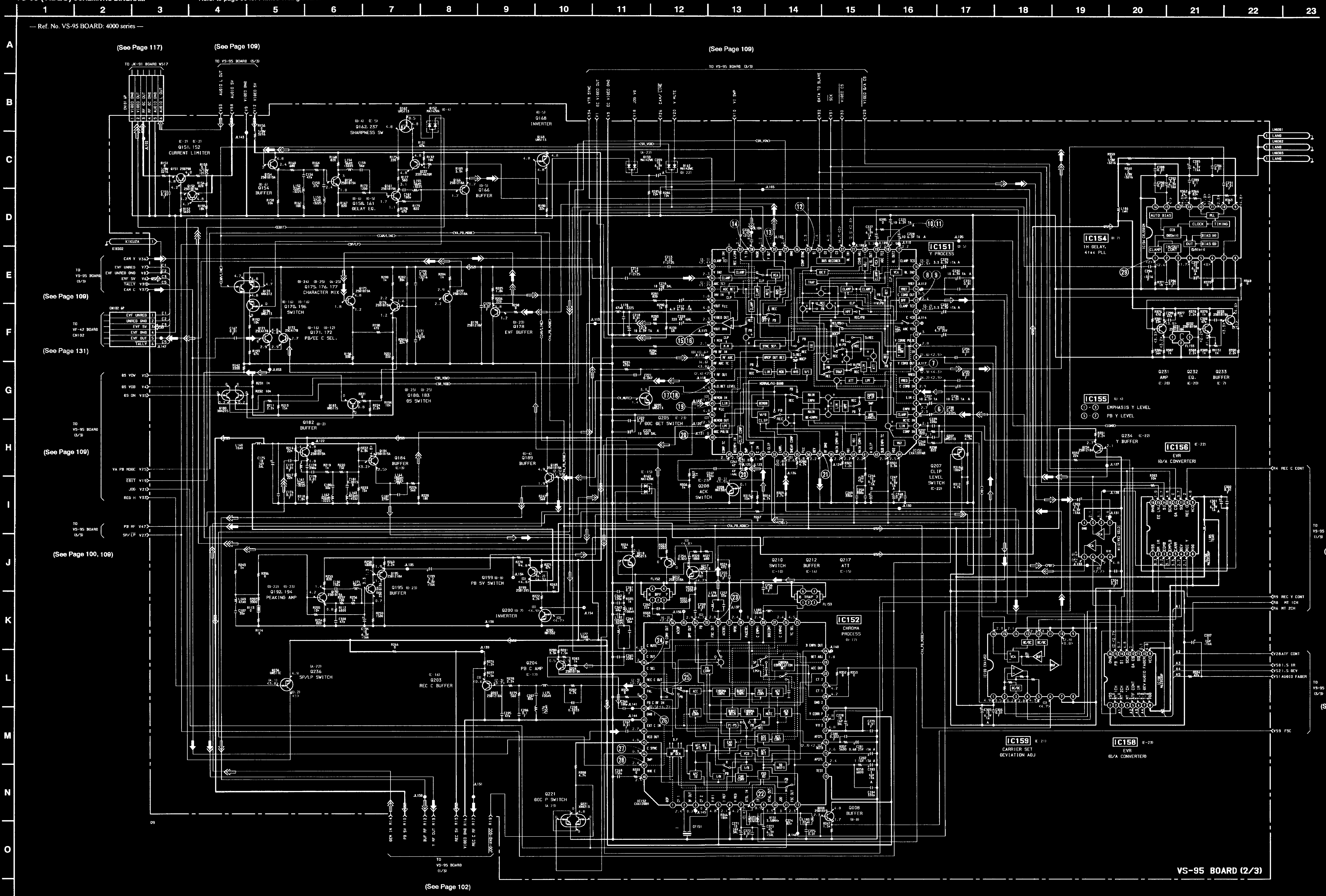
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

VS-95 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 95 for Printed Wiring Board.

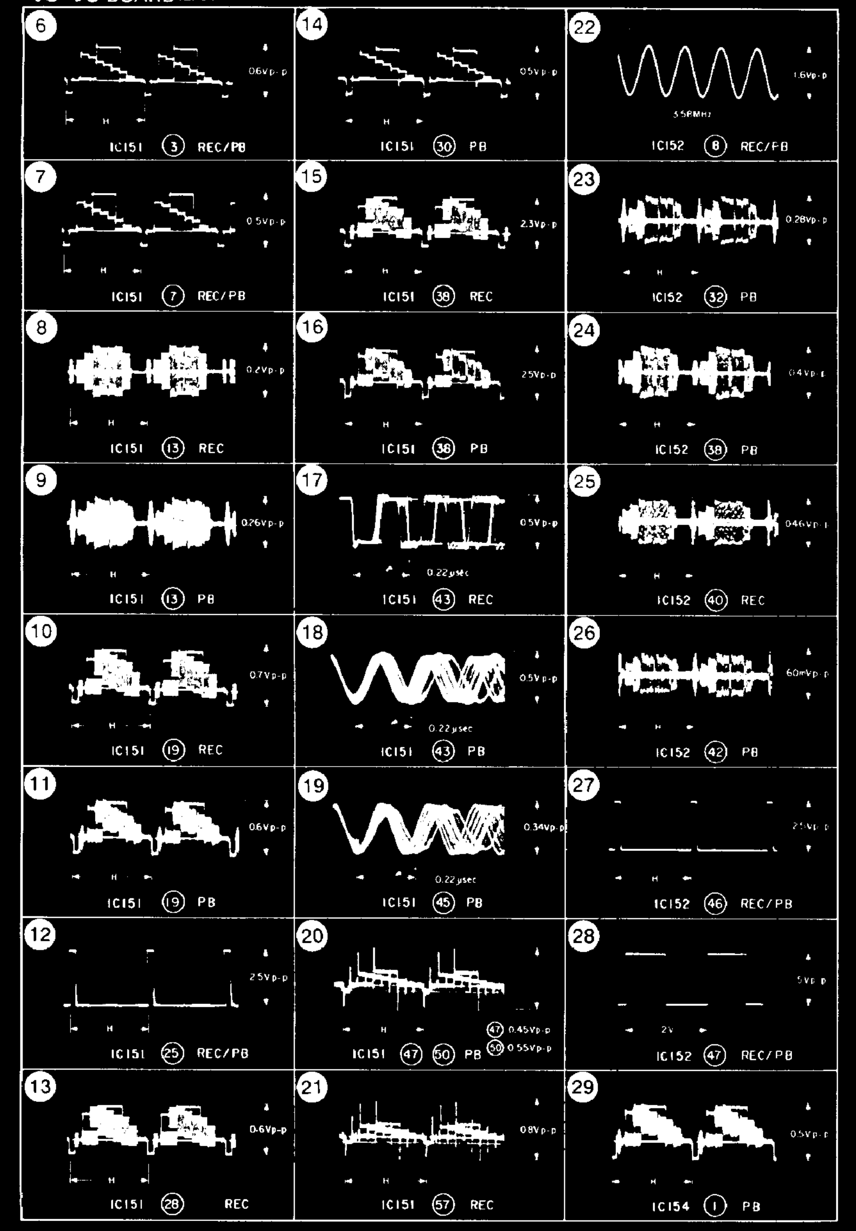
— Ref. No. VS-95 BOARD: 4000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
A B C D E F G H I J K L M N O P
(See Page 117)
(See Page 109)
(See Page 109)
(See Page 109)
(See Page 131)
(See Page 109)
(See Page 100, 109)
(See Page 102)
(See Page 102)
(See Page 109)
TO JK-91 BOARD W517
TO VS-95 BOARD (3/3)
Q151, 152 CURRENT LIMITER
Q162, 237 SHARPNESS SW
Q168 INVERTER
Q154 BUFFER
Q158, 161 DELAY EQ.
Q166 BUFFER
Q175, 176, 177 CHARACTER MIX
Q170, 196 SWITCH
Q171, 172 PB/EE C SEL.
Q178 EVF BUFFER
Q180, 183 OS SWITCH
Q182 BUFFER
Q184 BUFFER
Q189 BUFFER
Q192, 194 PEAKING AMP
Q195 BUFFER
Q199 PB 5V SWITCH
Q200 INVERTER
Q236 SP/LP SWITCH
Q203 REC C BUFFER
Q204 PB C AMP
Q205 DOC DET SWITCH
Q208 ACK SWITCH
Q207 CLIP LEVEL SWITCH
Q210 SWITCH
Q212 BUFFER
Q217 ATT
Q221 DOC P SWITCH
Q208 BUFFER
IC151 Y PROCESS
IC152 CHROMA PROCESS
IC154 1H DELAY, 4fsc PLL
IC155 EMPHASIS Y LEVEL PB Y LEVEL
IC156 EVR (D/A CONVERTER)
IC158 EVR (D/A CONVERTER)
IC159 CARRIER SET DEVIATION ADJ
Q231 AMP
Q232 EQ.
Q233 BUFFER
Q234 Y BUFFER
VS-95 BOARD (2/3)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	
PB	⇨	⇨≫	⇨⋙	⇨

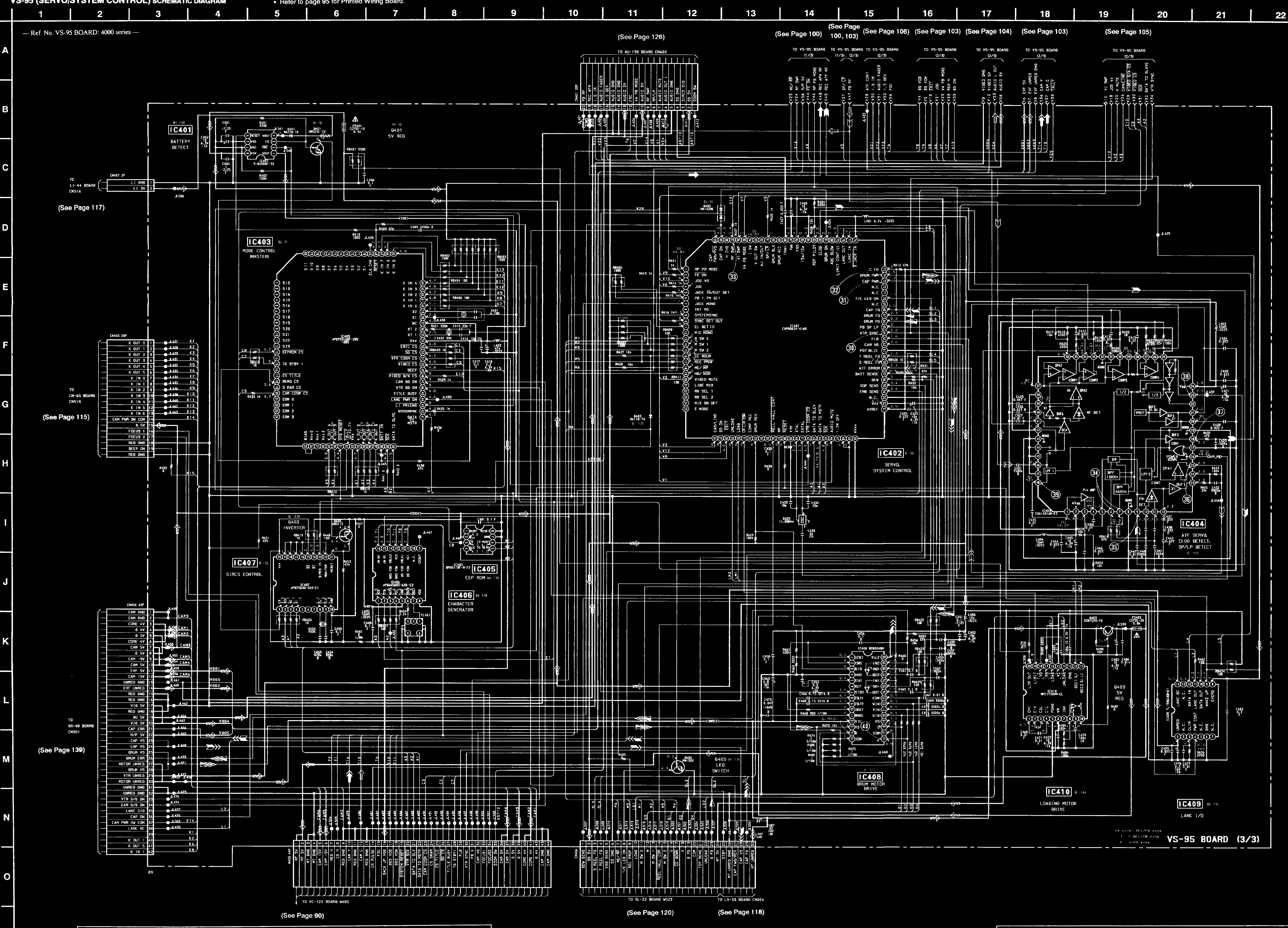
VS-95 BOARD(2/3)



VS-95 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

- Refer to page 95 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —



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A
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D
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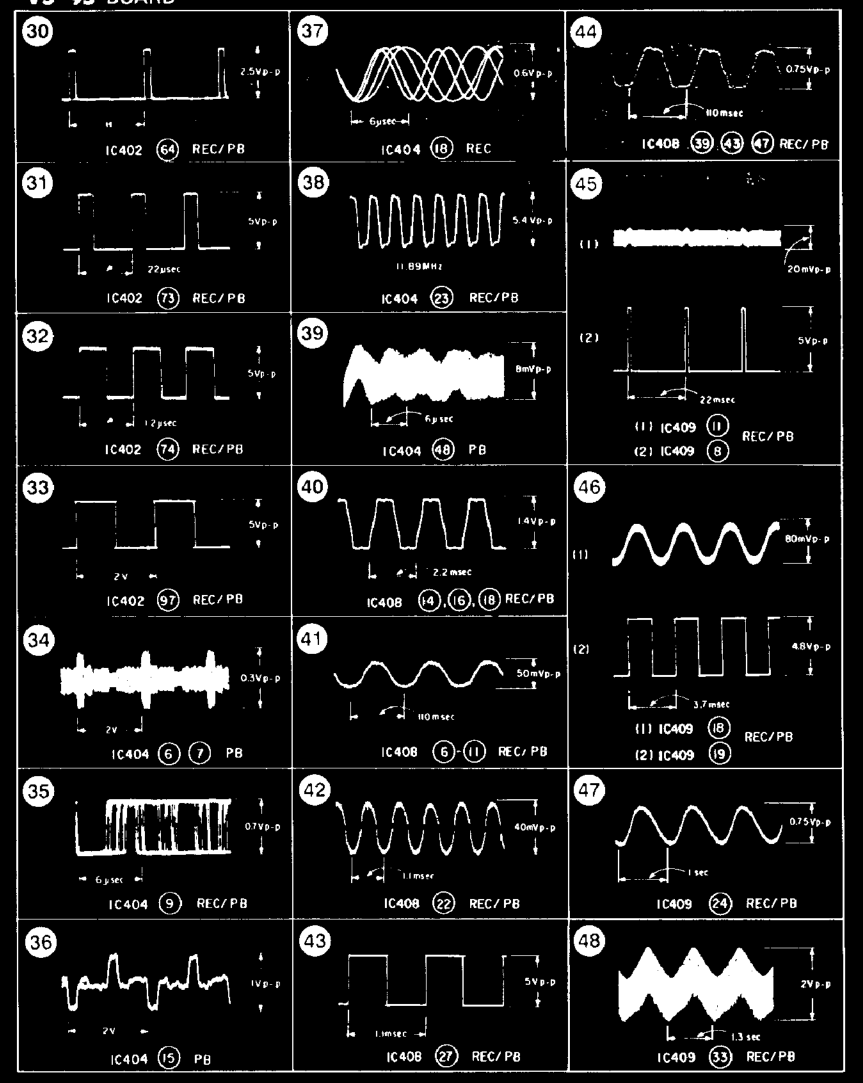
H
I
J
K
L
M
N
O
P
(See Page 126)
TO AU-158 BOARD CN402
(See Page 100)
(See Page 100, 103)
(See Page 106)
(See Page 103)
(See Page 104)
(See Page 103)
(See Page 105)
TO L1-44 BOARD CN516
(See Page 117)
TO CN-65 BOARD CN518
(See Page 115)
TO DD-48 BOARD CN901
(See Page 139)
IC401
BATTERY DETECT
Q401
5V REG
IC403
MODE CONTROL (MASTER)
IC402
SERVO, SYSTEM CONTROL
IC404
ATF SERVO, CLOG DETECT, SP/LP DETECT
IC407
SIRCS CONTROL
Q405
INVERTER
IC405
EEP ROM
IC406
CHARACTER GENERATOR
IC408
DRUM MOTOR DRIVE
IC410
LOADING MOTOR DRIVE
Q409
5V REG
IC409
LANC I/O
Q406
LED SWITCH
TO VC-122 BOARD W405
(See Page 90)
TO SL-22 BOARD W522
(See Page 120)
TO LS-55 BOARD CN004
(See Page 118)
VS-95 BOARD (3/3)

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo (speed and phase)		▷	
Capstan speed servo			
Capstan phase servo			▷
Capstan servo (speed and phase)		▷	
Ref. signal	➡	▷	▷

VS-95 BOARD



CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITFIUM BATTERY HOLDER) PRINTED WIRING BOARDS

— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —

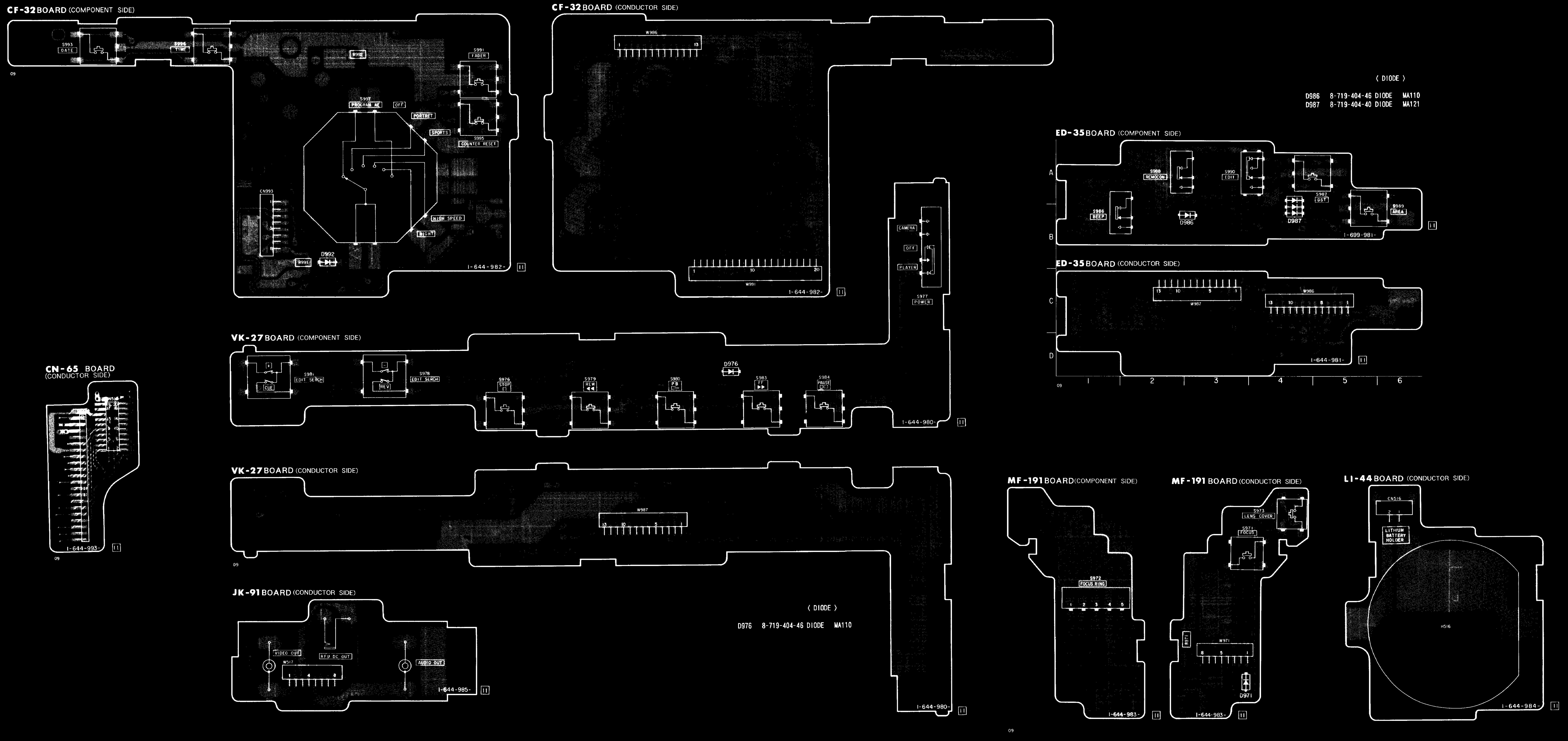
- **For printed wiring boards.**
- CF-32, ED-35, MF-191, VK-27 boards is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For printed wiring boards.**
- CN-65 board is the printed wiring board which has four layers structure but inner two layers' patterns and component side pattern are omitted.
- ● : Through hole is omitted.

(DIODE)

D992 8-719-404-46 DIODE MA110


CF-32 BOARD (COMPONENT SIDE)
S993
DATE
S996
TIME
R992
S991
FADER
S997
PROGRAM AE
OFF
PORTRET
SPORTS
S995
COUNTER RESET
HIGH SPEED
NIGHT
CN993
R991
D992
1-644-982-
11
09
CF-32 BOARD (CONDUCTOR SIDE)
W986
1
13
10
20
W991
1-644-982-
CAMERA
OFF
PLAYER
S977
POWER
ED-35 BOARD (COMPONENT SIDE)
A
B
S988
REMOCON
S990
EDIT
S987
DST
S986
BEEP
D986
D987
S989
AREA
1-699-981-
ED-35 BOARD (CONDUCTOR SIDE)
C
D
W987
W986
13
10
5
1
1-644-981-
1
2
3
4
5
6
CN-65 BOARD (CONDUCTOR SIDE)
1-644-993-
VK-27 BOARD (COMPONENT SIDE)
S981
EDIT SERCH
CUE
S978
EDIT SERCH
REV
S976
STOP
S979
REW
S980
PB
D976
S983
FF
S984
PAUSE
1-644-980-
VK-27 BOARD (CONDUCTOR SIDE)
W987
1-644-980-
JK-91 BOARD (CONDUCTOR SIDE)
VIDEO OUT
RFU DC OUT
W517
AUDIO OUT
1-644-985-
MF-191 BOARD (COMPONENT SIDE)
S972
FOCUS RING
1-644-983-
MF-191 BOARD (CONDUCTOR SIDE)
S973
LENS COVER
S971
FOCUS
R971
W971
D971
1-644-983-
LI-44 BOARD (CONDUCTOR SIDE)
CN516
LITHIUM BATTERY HOLDER
H516
1-644-984-

(DIODE)

D986 8-719-404-46 DIODE MA110
D987 8-719-404-40 DIODE MA121

(DIODE)

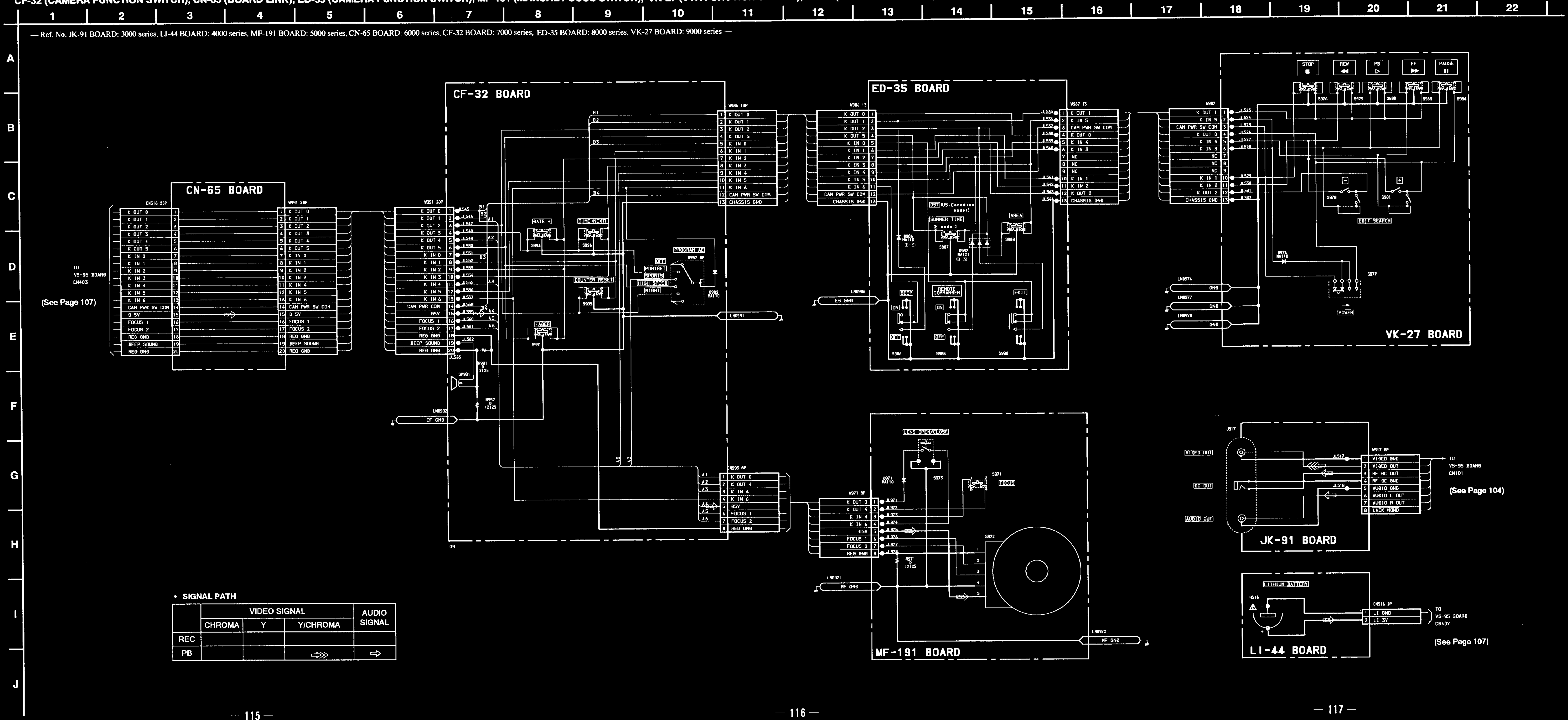
D976 8-719-404-46 DIODE MA110

(DIODE)

D971 8-719-404-46 DIODE MA110

CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITFIUM BATTERY HOLDER) SCHEMATIC DIAGRAMS

— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —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22
A
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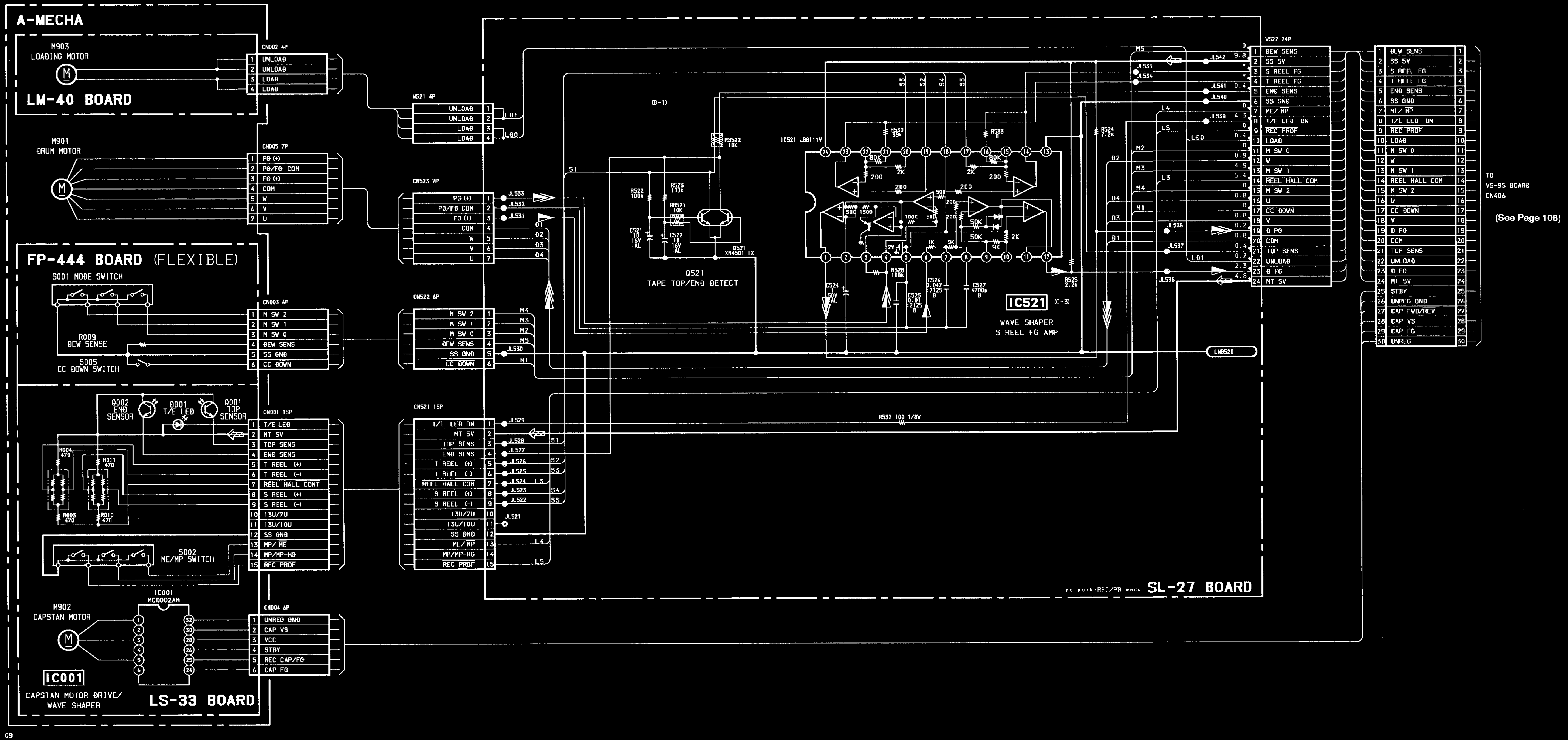
C
D
E
F
G
H
I
J
CN-65 BOARD
TO VS-95 BOARD CN405
(See Page 107)
CF-32 BOARD
GATE
TIME INDEX
COUNTER RESET
FADER
PROGRAM AE
OFF
PORTRET
SPORTS
HIGH SPEED
NIGHT
CF GND
ED-35 BOARD
BEEP
ON
OFF
REMOTE COMMANDER
EDIT
AREA
SUMMER TIME
EG GND
STOP
REW
PB
FF
PAUSE
EDIT SEARCH
POWER
VK-27 BOARD
LENS OPEN/CLOSE
FOCUS
MF GND
MF-191 BOARD
VIDEO OUT
RF DC OUT
AUDIO OUT
TO VS-95 BOARD CN101
(See Page 104)
JK-91 BOARD
LITHIUM BATTERY
TO VS-95 BOARD CN407
(See Page 107)
LI-44 BOARD

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨	⇨

SL-27 (MECHA CONTROL), FP-444 (TAPE SENSOR), LM-40 (LOADING MOTOR DRIVE), LS-33 (CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS

— Ref. No. SL-27 BOARD: 5000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J
A-MECHA
M903
LOADING MOTOR
LM-40 BOARD
CN002 4P
1 UNLOAD
2 UNLOAD
3 LOAD
4 LOAD
M901
DRUM MOTOR
CN005 7P
1 PG (+)
2 PG/FG COM
3 FG (+)
4 COM
5 W
6 V
7 U
FP-444 BOARD (FLEXIBLE)
S001 MODE SWITCH
R009
DEW SENSE
S005
CC DOWN SWITCH
CN003 6P
1 M SW 2
2 M SW 1
3 M SW 0
4 DEW SENS
5 SS GND
6 CC DOWN
Q002
END
SENSOR
D001
T/E LED
Q001
TOP
SENSOR
R004 470
R011 470
R003 470
R010 470
CN001 15P
1 T/E LED
2 MT 5V
3 TOP SENS
4 END SENS
5 T REEL (+)
6 T REEL (-)
7 REEL HALL CONT
8 S REEL (+)
9 S REEL (-)
10 13U/7U
11 13U/10U
12 SS GND
13 MP/ ME
14 MP/MP-HG
15 REC PROF
S002
ME/MP SWITCH
IC001
MCD002AM
M902
CAPSTAN MOTOR
IC001
CAPSTAN MOTOR DRIVE/
WAVE SHAPER
LS-33 BOARD
CN004 6P
1 UNREG GND
2 CAP VS
3 VCC
4 STBY
5 REC CAP/FG
6 CAP FG
09
W521 4P
UNLOAD 1
UNLOAD 2
LOAD 3
LOAD 4
LD1
LD0
CN523 7P
PG (+) 1
PG/FG COM 2
FG (+) 3
COM 4
W 5
V 6
U 7
JL533
JL532
JL531
D1 D2 D3 D4
CN522 6P
M SW 2 1
M SW 1 2
M SW 0 3
DEW SENS 4
SS GND 5
CC DOWN 6
M4 M3 M2 M5 M1
JL530
CN521 15P
T/E LED ON 1
MT 5V 2
TOP SENS 3
END SENS 4
T REEL (+) 5
T REEL (-) 6
REEL HALL COM 7
S REEL (+) 8
S REEL (-) 9
13U/7U 10
13U/10U 11
SS GND 12
ME/ MP 13
MP/MP-HG 14
REC PROF 15
JL529 JL528 JL527 JL526 JL525 JL524 JL523 JL522 JL521
S1 S2 S3 S4 S5 L3 L4 L5
(B-1)
RB522 10K
R522 100k
R523 100k
RB521 10K
C521 10 16V :AL
C522 10 16V :AL
Q521 XN4501-TX
Q521
TAPE TOP/END DETECT
IC521 LB8111V
R530 39k
R533 0
80K 2K 200 200 200 2K 80K 200
50K 1500 100K 500 500 200 200 50K 50K 2K 1K 9K 9K 2V
R528 100k
C524 1 50V :AL
C525 0.01 :2125 B
C526 0.047 :2125 B
C527 4700p B
R524 2.2k
R525 2.2k
IC521 (C-3)
WAVE SHAPER
S REEL FG AMP
M2 M3 M4 M1 D2 D4 D3 D1 L4 L5 LD0 LD1 L3
JL535 JL534 JL542 JL541 JL540 JL539 JL538 JL537 JL536
LND520
R532 100 1/8W
no mark:REC/PB mode
SL-27 BOARD
W522 24P
0 9.8 * * 0.4 0 4.3 0 0.4 0 0.9 4.9 5.4 0 0.8 0 0.8 0.2 0.8 0.4 0.2 2.3 4.8
1 DEW SENS
2 SS 5V
3 S REEL FG
4 T REEL FG
5 END SENS
6 SS GND
7 ME/ MP
8 T/E LED ON
9 REC PROF
10 LOAD
11 M SW 0
12 W
13 M SW 1
14 REEL HALL COM
15 M SW 2
16 U
17 CC DOWN
18 V
19 D PG
20 COM
21 TOP SENS
22 UNLOAD
23 D FG
24 MT 5V
1 DEW SENS 1
2 SS 5V 2
3 S REEL FG 3
4 T REEL FG 4
5 END SENS 5
6 SS GND 6
7 ME/ MP 7
8 T/E LED ON 8
9 REC PROF 9
10 LOAD 10
11 M SW 0 11
12 W 12
13 M SW 1 13
14 REEL HALL COM 14
15 M SW 2 15
16 U 16
17 CC DOWN 17
18 V 18
19 D PG 19
20 COM 20
21 TOP SENS 21
22 UNLOAD 22
23 D FG 23
24 MT 5V 24
25 STBY 25
26 UNREG GND 26
27 CAP FWD/REV 27
28 CAP VS 28
29 CAP FG 29
30 UNREG 30
TO
VS-95 BOARD
CN406

(See Page 108)

• **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

SL-27 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-27 BOARD: 5000 series —

- FP-444, LM-40, LS-33 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

- **For printed wiring boards.**
- SL-27 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

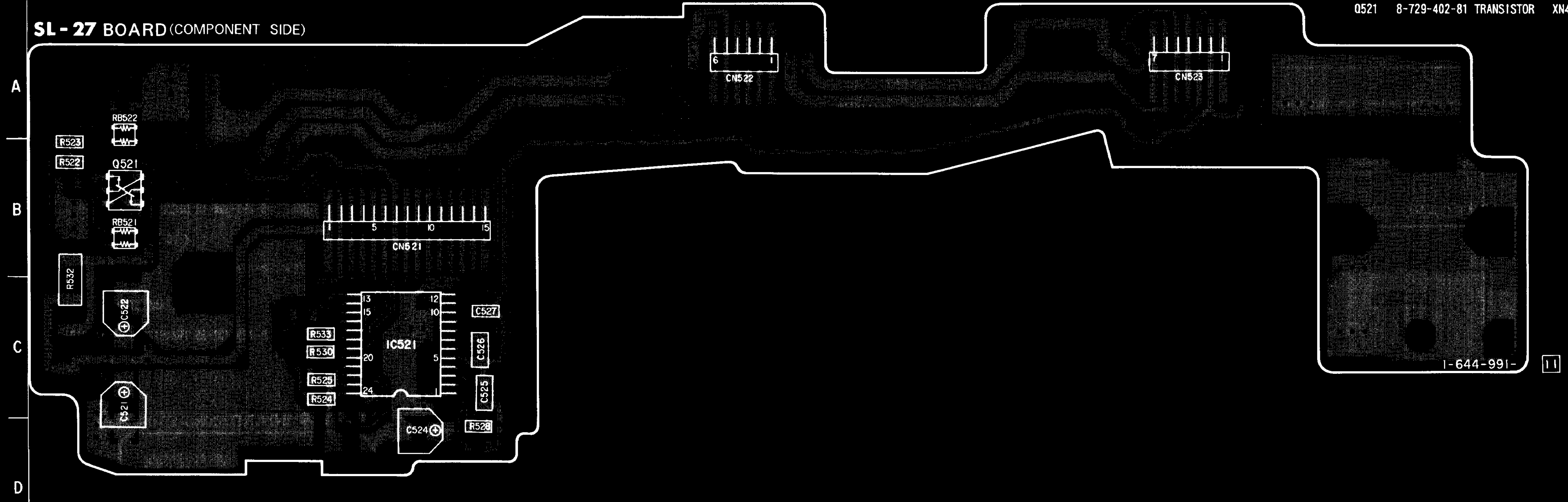
(IC)

IC521	8-759-059-09		LB8111V

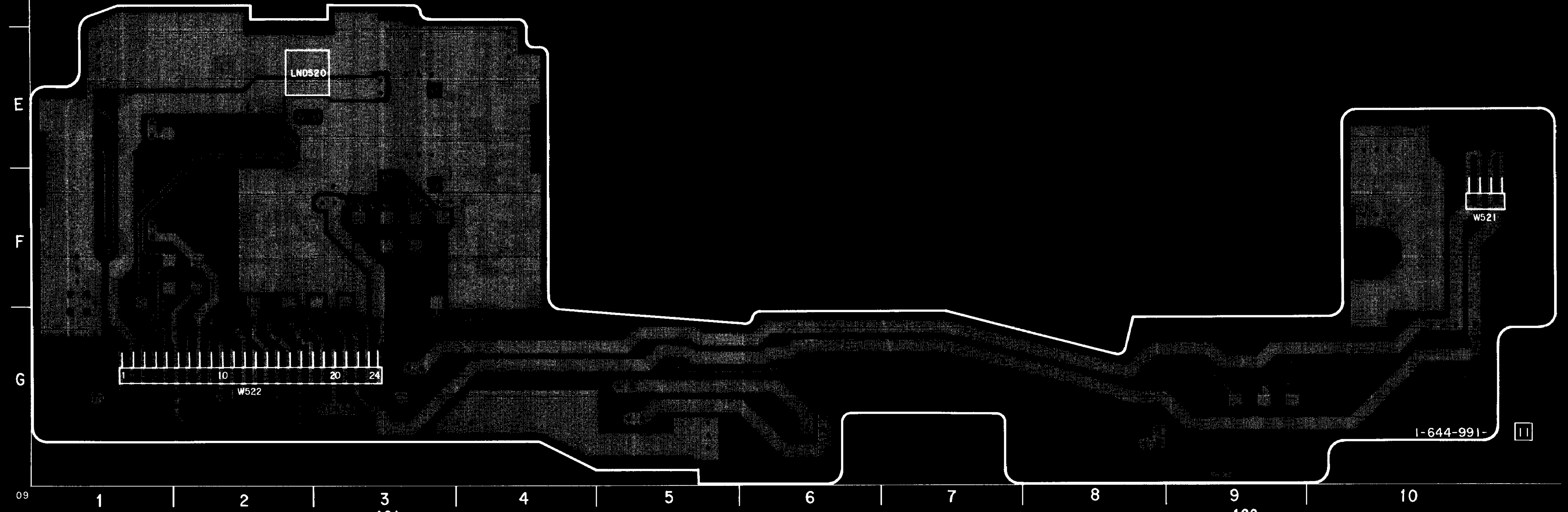
(TRANSISTOR)

Q521	8-729-402-81	TRANSISTOR	XN4501

SL-27 BOARD (COMPONENT SIDE)


A
B
C
D
CN522
6
1
CN523
7
1
RB522
R523
R522
Q521
RB521
R532
C522
C521
CN521
1
5
10
15
IC521
13
12
15
10
20
5
24
R533
R530
R525
R524
C527
C526
C525
C524
R528
1-644-991-
11

SL-27 BOARD (CONDUCTOR SIDE)


E
F
G
LND520
W521
W522
1
10
20
24
1-644-991-
11
09
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10

AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) PRINTED WIRING BOARDS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —

- **For printed wiring boards.**
- AU-138, MA-149 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

(IC)

IC601	8-759-823-19	IC	CXA1488RR
IC602	8-749-923-29	IC	RS-20E-T

(DIODE)

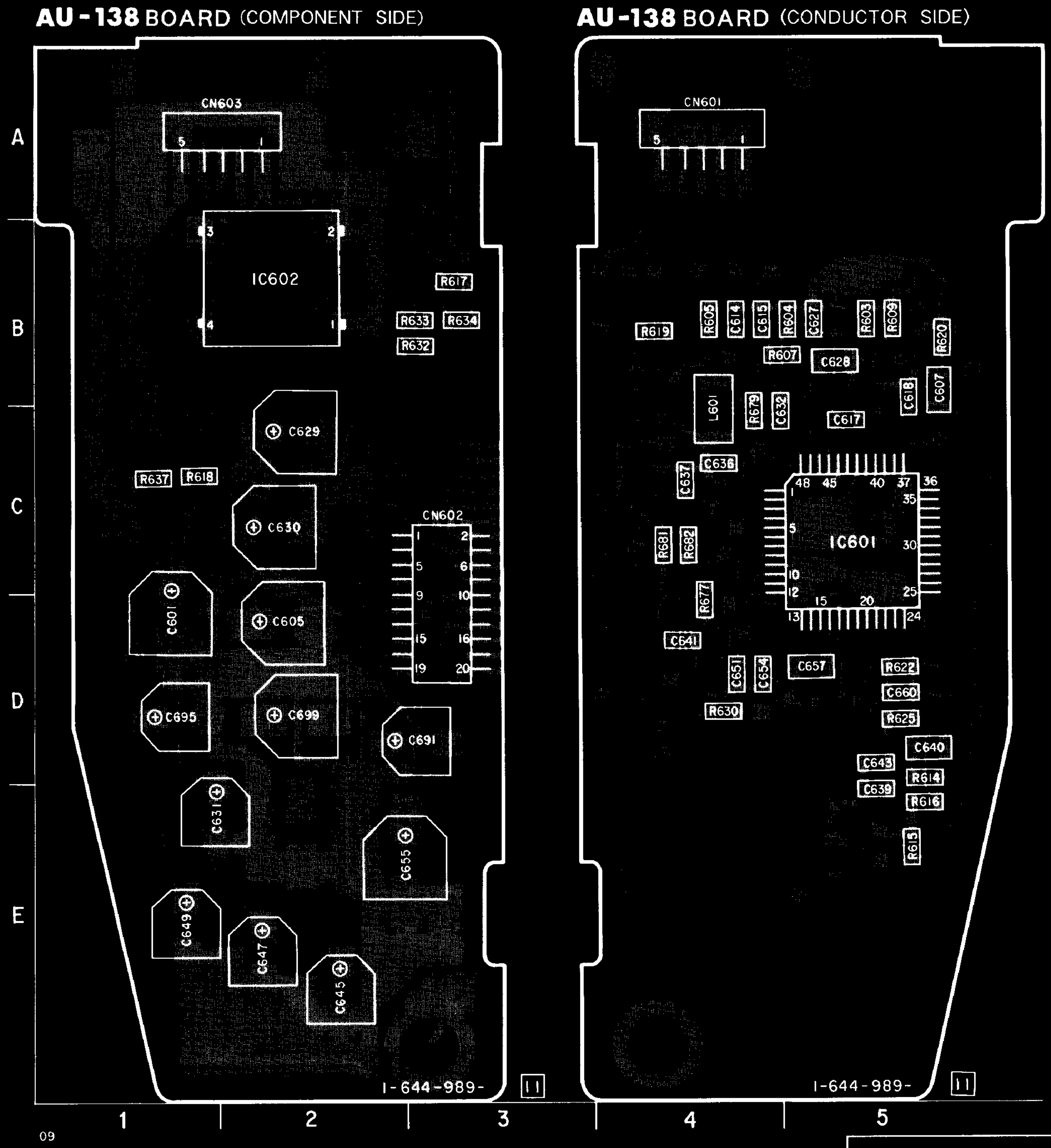
D552	8-719-404-46	DIODE	MA110

(IC)

IC551	8-759-822-37	IC	LA7293M

(TRANSISTOR)

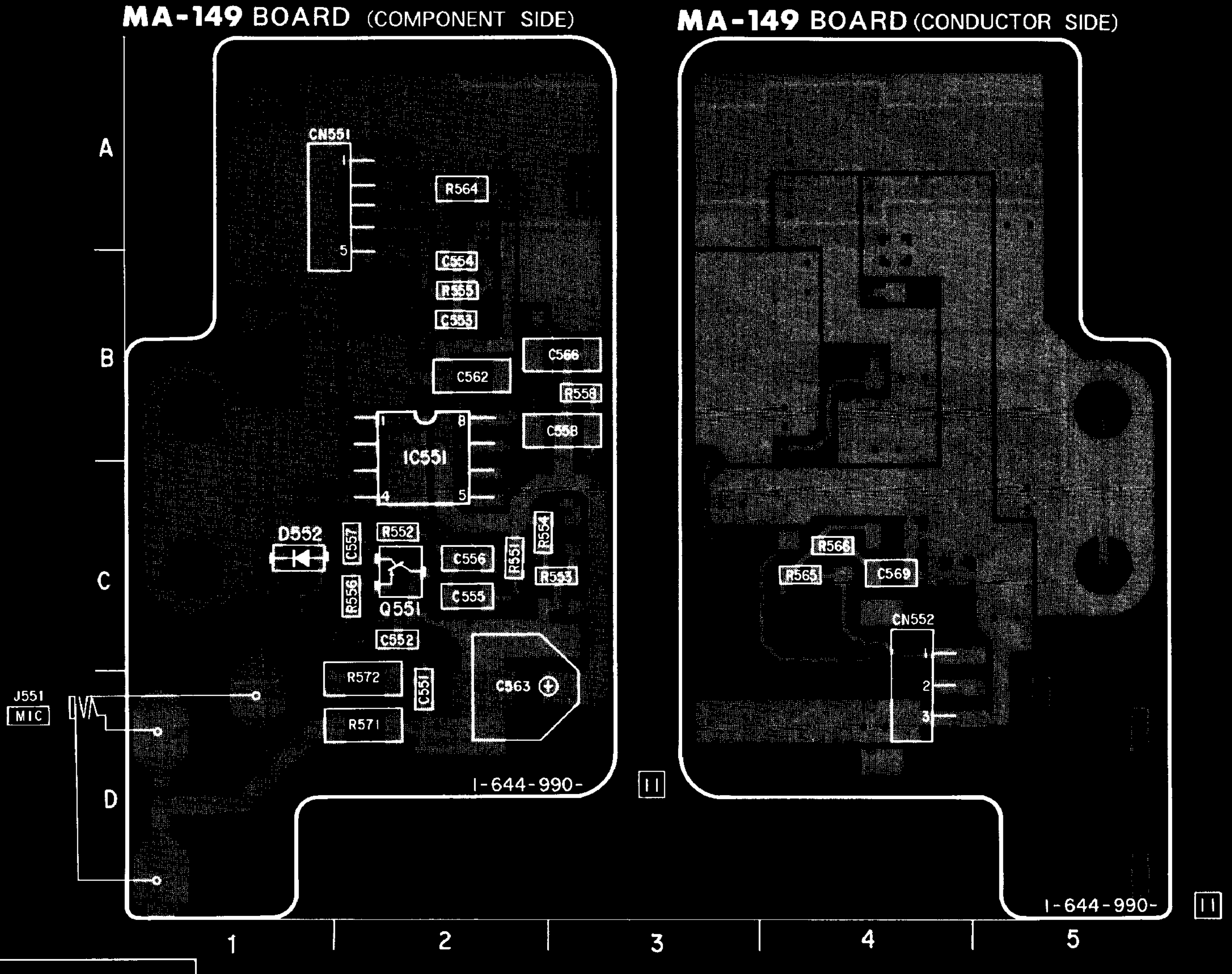
Q551	8-729-402-55	TRANSISTOR	2SB1218A



AU-138 BOARD (COMPONENT SIDE)

AU-138 BOARD (CONDUCTOR SIDE)

A
B
C
D
E
1
2
3
4
5
09
CN603
IC602
R617
R633
R634
R632
C629
R637
R618
C630
CN602
C601
C605
C695
C699
C691
C631
C655
C649
C647
C645
1-644-989-
11
CN601
R619
R605
C614
C615
R604
C627
R603
R609
R620
R607
C628
L601
R679
C632
C617
C618
C607
C636
C637
IC601
R681
R682
R677
C641
C651
C654
C657
R622
C660
R625
R630
C640
C643
R614
C639
R616
R615
1-644-989-
11



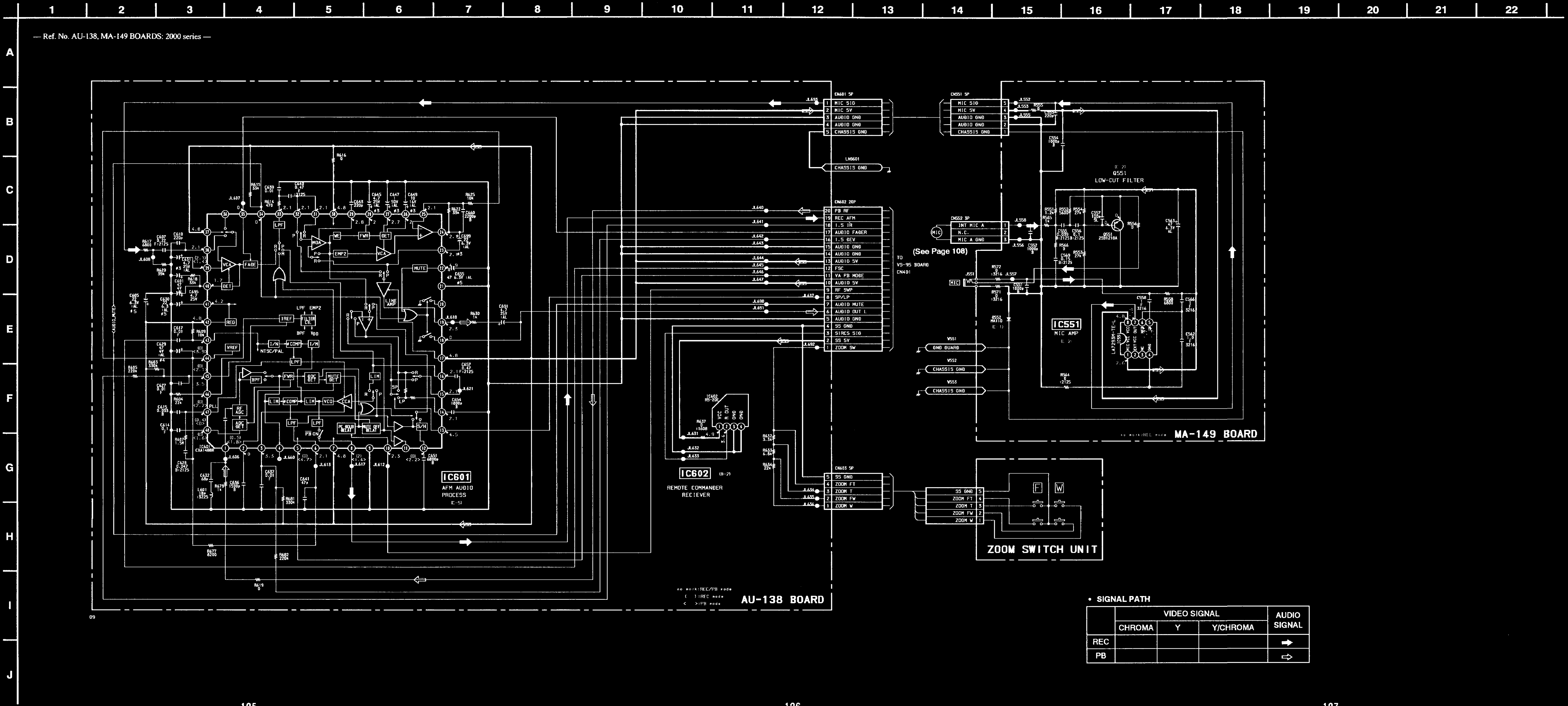
MA-149 BOARD (COMPONENT SIDE)

MA-149 BOARD (CONDUCTOR SIDE)

A
B
C
D
1
2
3
4
5
CN551
R564
C554
R555
C553
C566
C562
R559
C558
IC551
D552
C557
R552
R554
R556
C556
R551
R553
Q551
C555
C552
R572
C551
C563
R571
J551
MIC
1-644-990-
11
R566
R565
C569
CN552
1-644-990-
11

AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) SCHEMATIC DIAGRAMS

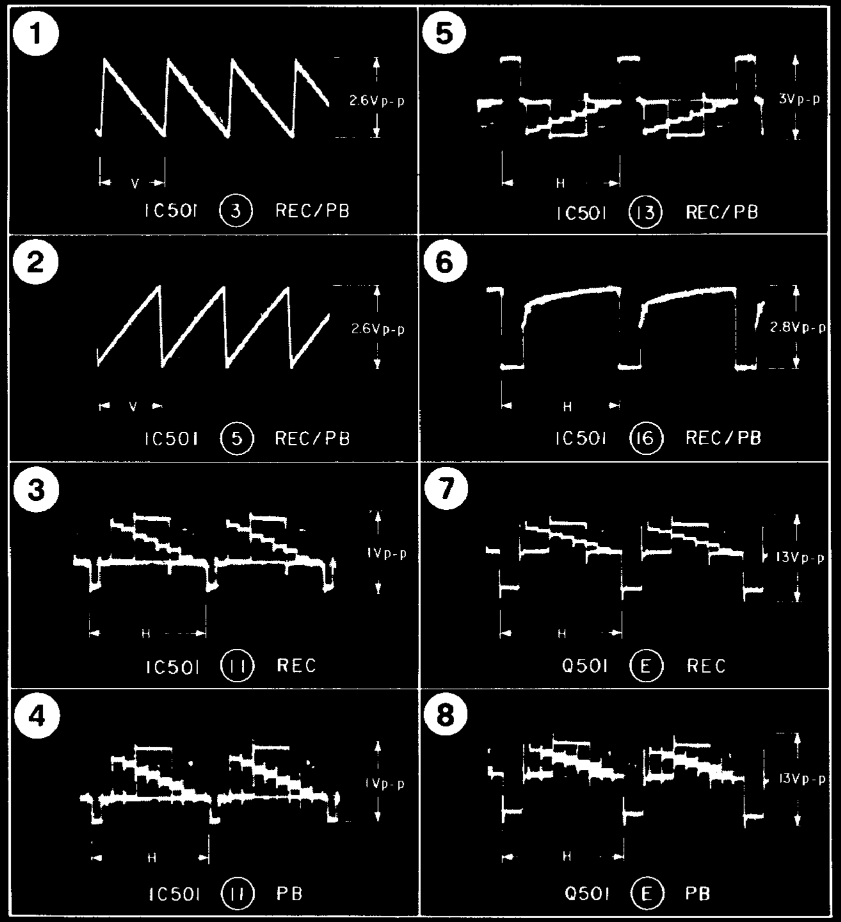
— Ref. No. AU-138, MA-149 BOARDS: 2000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
IC601
AFM AUDIO
PROCESS
IC601 CXA1488R
IC602
REMOTE COMMANDER
RECIEVER
IC602 RS-20E
VCC
R OUT
GND
GND
CN601 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
LN8601
CHASSIS GND
CN602 20P
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
AUDIO 5V
RF SWP
SP/LP
AUDIO MUTE
AUDIO OUT L
AUDIO GND
SS GND
SIRCS SIG
SS 5V
ZOOM SW
TO
VS-95 BOARD
CN401
(See Page 108)
CN603 5P
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
CN551 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
CN552 3P
INT MIC A
N.C.
MIC A GND
MIC
J551
Q551
LOW-CUT FILTER
Q551 2SB1218A
IC551
MIC AMP
LA7293M-TE-L
D552 MA110
W551
GND GUARD
W552
CHASSIS GND
W553
CHASSIS GND
MA-149 BOARD
ZOOM SWITCH UNIT
F
W
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-138 BOARD
09

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

VF-42 BOARD



(DIODE)

D501	8-719-820-65	DIODE	TLS221
D502	8-719-984-02	LED	BR4371F
D503	8-719-400-20	DIODE	MA152WA

(IC)

IC501	8-759-420-01	IC	AN2512S

(TRANSISTOR)

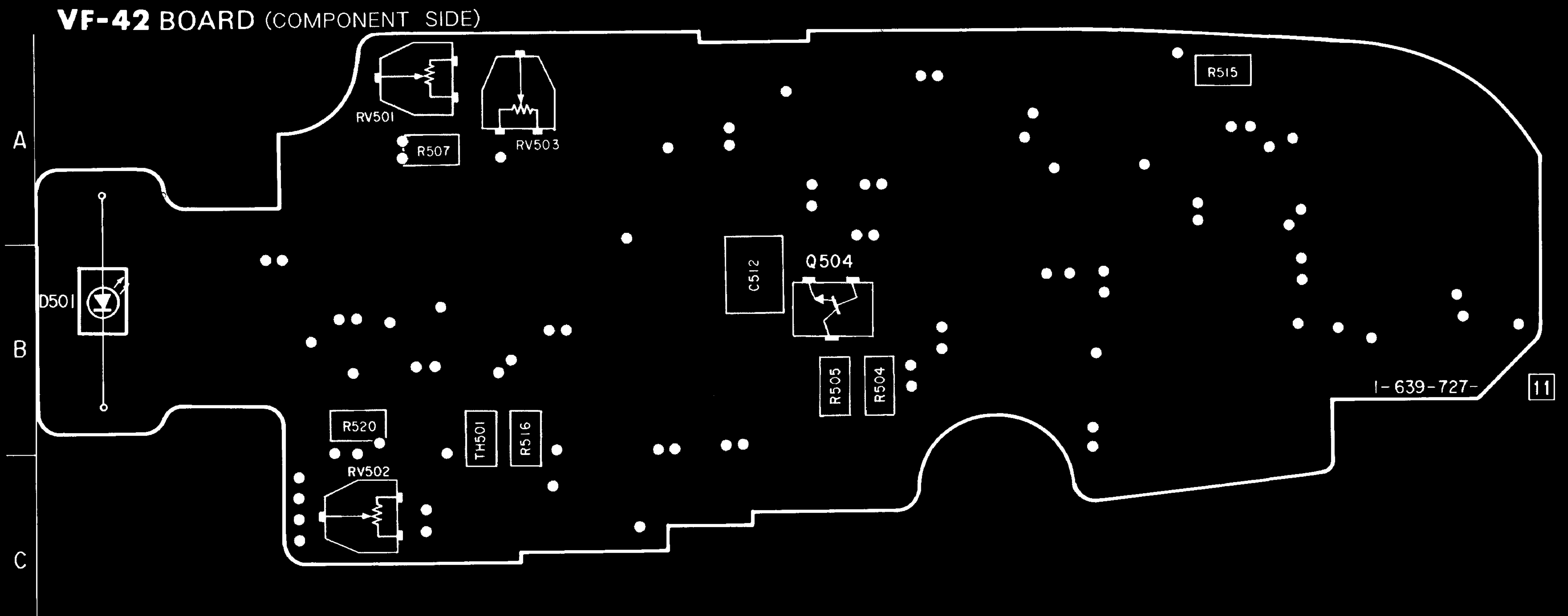
Q501	8-729-100-66	TRANSISTOR	2SC1623
Q502	8-729-216-31	TRANSISTOR	2SA1163-G
⚠Q503	8-729-100-66	TRANSISTOR	2SC1623
Q504	8-729-106-68	TRANSISTOR	2SD1615A-GP

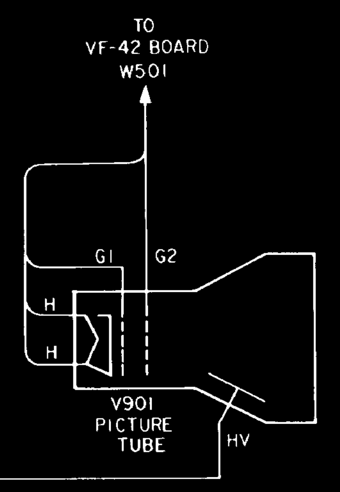
- **For printed wiring boards.**

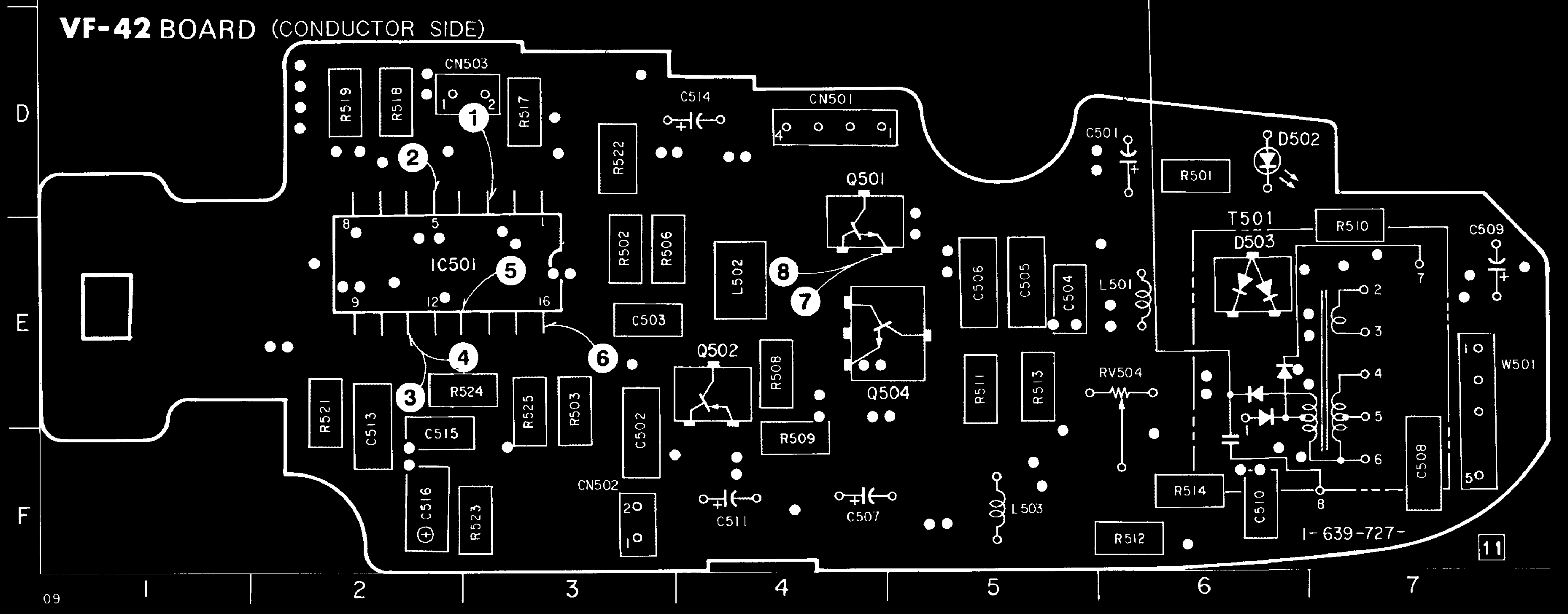
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

— Ref. No. VF-42 BOARD: 1000 series —

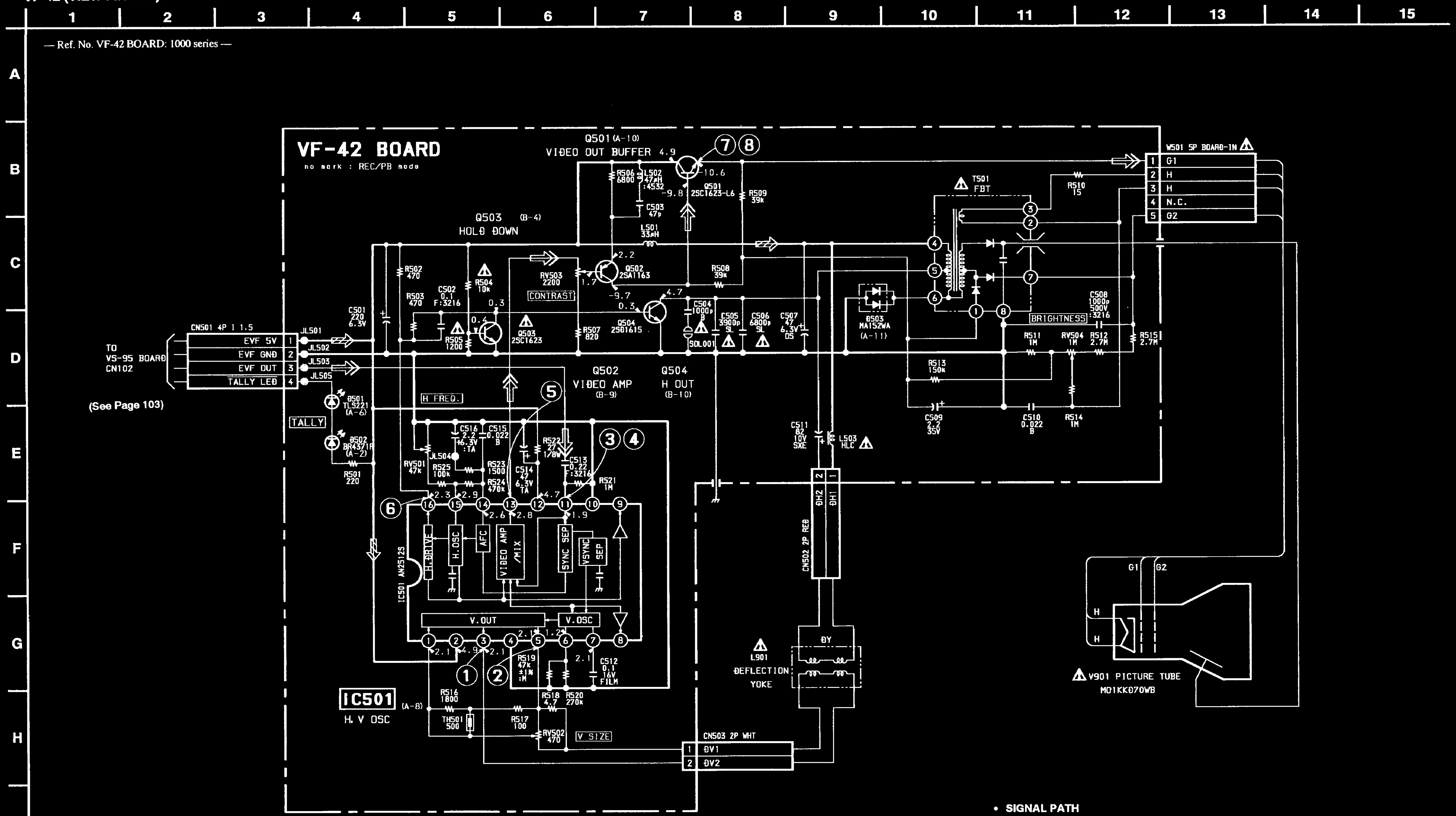

VF-42 BOARD (COMPONENT SIDE)
A
B
C
RV501
R507
RV503
R515
D501
C512
Q504
R505
R504
R520
RV502
TH501
R516
1-639-727-
11


TO VF-42 BOARD W501
G1
G2
H
H
V901 PICTURE TUBE
HV


VF-42 BOARD (CONDUCTOR SIDE)
D
E
F
CN503
R519
R518
R517
C514
CN501
R522
C501
R501
D502
Q501
IC501
R502
R506
L502
C503
T501
D503
R510
C509
C506
C505
C504
L501
Q502
R508
Q504
R511
R513
RV504
W501
R521
C513
R524
R525
R503
C502
R509
C515
C516
R523
CN502
C511
C507
L503
R514
C510
C508
R512
1-639-727-
11
09
1
2
3
4
5
6
7

VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-42 BOARD: 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
VF-42 BOARD
no mark : REC/PB mode
Q501 (A-10) VIDEO OUT BUFFER
Q503 (B-4) HOLD DOWN
Q502 VIDEO AMP (B-9)
Q504 H OUT (B-10)
IC501 H, V OSC (A-8)
IC501 AN2512S
CN501 4P 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
TO VS-95 BOARD CN102
(See Page 103)
TALLY
D501 TLS221 (A-6)
D502 BR4371F (A-2)
CONTRAST
H FREQ.
BRIGHTNESS
V SIZE
T501 FBT
D503 MA152WA (A-11)
W501 5P BOARD-IN
G1
H
H
N.C.
G2
CN502 2P RED
DH2
DH1
CN503 2P WHT
DV1
DV2
L901 DEFLECTION YOKE
DY
L503 HLC
V901 PICTURE TUBE M01KK070WB
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
09

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨	

DD-48 (POWER), SW-205 (CAMERA FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —

- **For printed wiring boards.**
- DD-48 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

(DIODE)

D901	8-719-981-59	DIODE	FC805
D905	8-719-404-46	DIODE	MA110
D906	8-719-404-46	DIODE	MA110

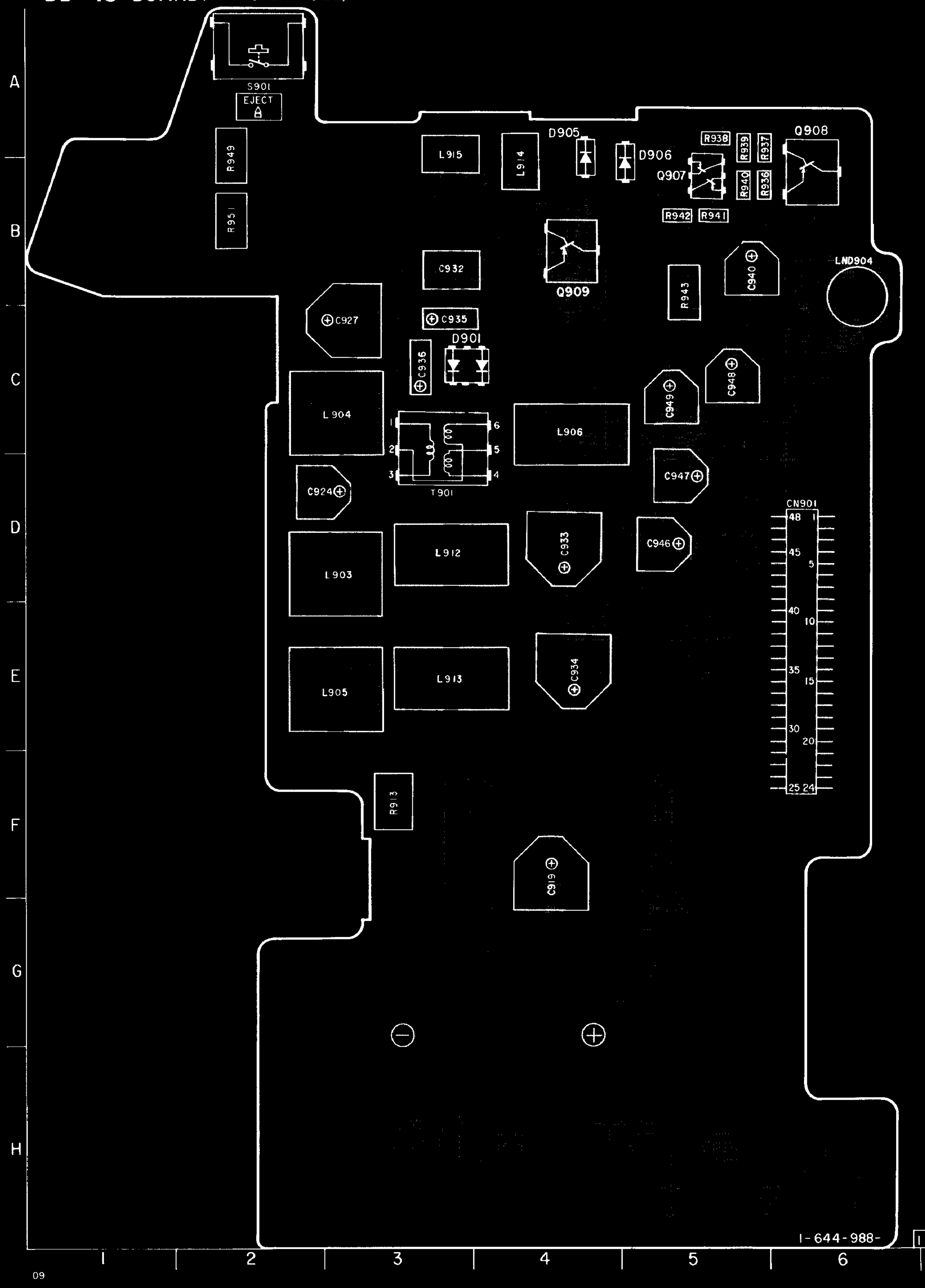
(IC)

IC901	8-759-060-94	IC	MB3785APFV-G-BND-ER

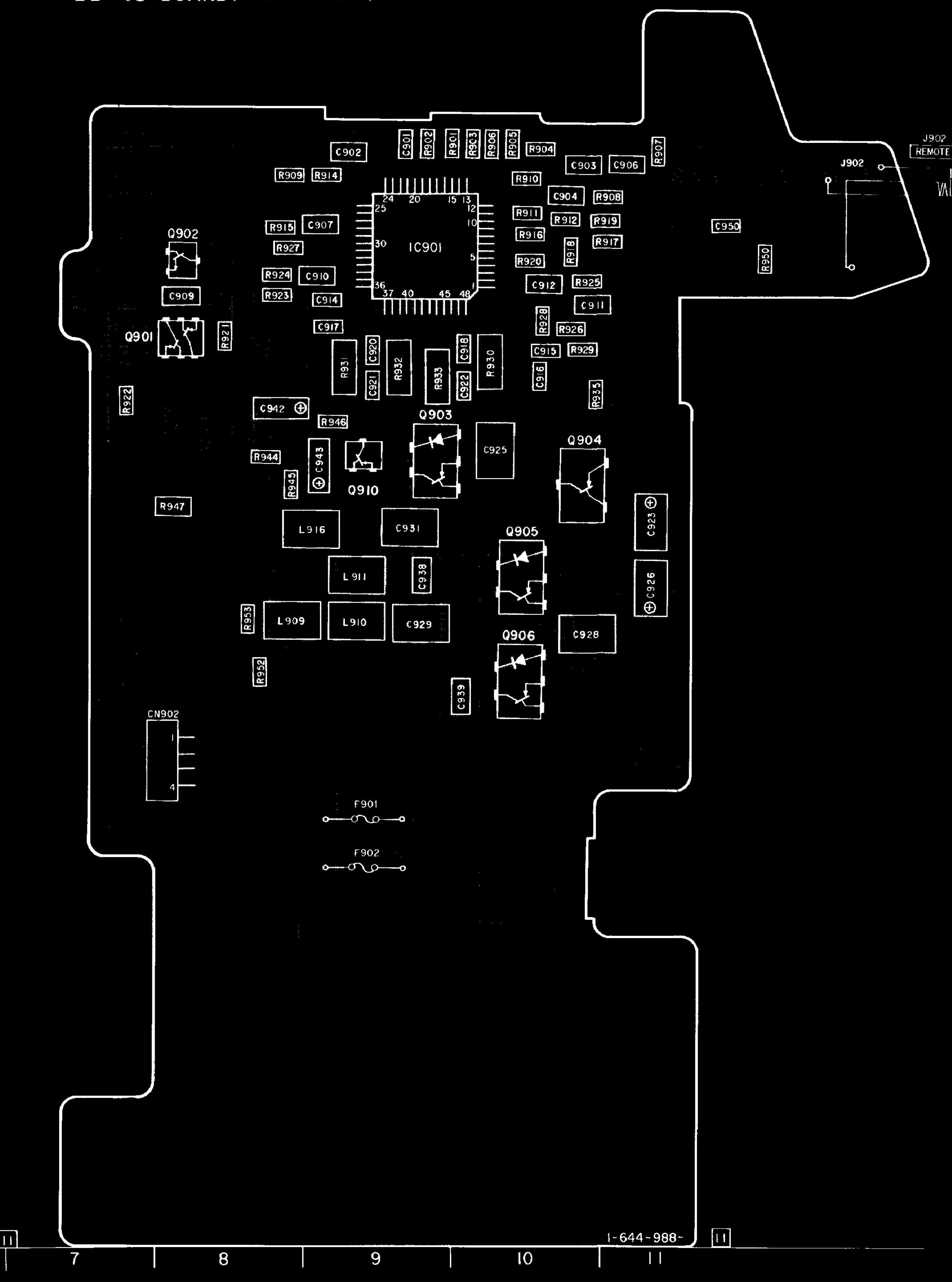
(TRANSISTOR)

Q901	8-729-403-27	TRANSISTOR	XN4401
Q902	8-729-402-42	TRANSISTOR	RN1304
Q903	8-729-823-84	TRANSISTOR	FP102
Q904	8-729-804-41	TRANSISTOR	2SB1122-S
Q905	8-729-823-82	TRANSISTOR	FP101
Q906	8-729-823-82	TRANSISTOR	FP101
Q907	8-729-402-81	TRANSISTOR	XN4501
Q908	8-729-805-25	TRANSISTOR	2SB1121
Q909	8-729-805-25	TRANSISTOR	2SB1121
Q910	8-729-014-20	TRANSISTOR	RN2304

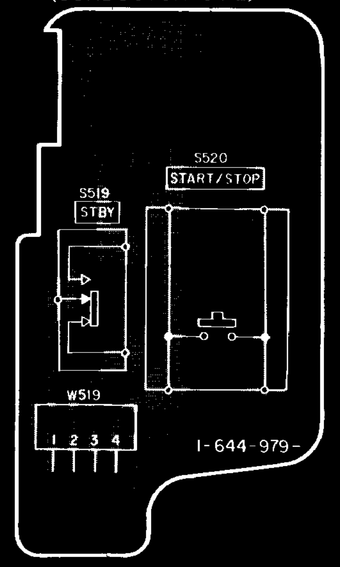
DD-48 BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
S901
EJECT
R949
R951
L915
L914
D905
D906
Q907
R938
R939
R937
R940
R936
Q908
R942
R941
C932
Q909
R943
C940
LND904
C927
C935
D901
C936
C949
C948
L904
T901
L906
C947
C924
L903
L912
C933
C946
CN901
L905
L913
C934
R913
C919
1-644-988-
11
09
1
2
3
4
5
6

DD-48 BOARD(CONDUCTOR SIDE)

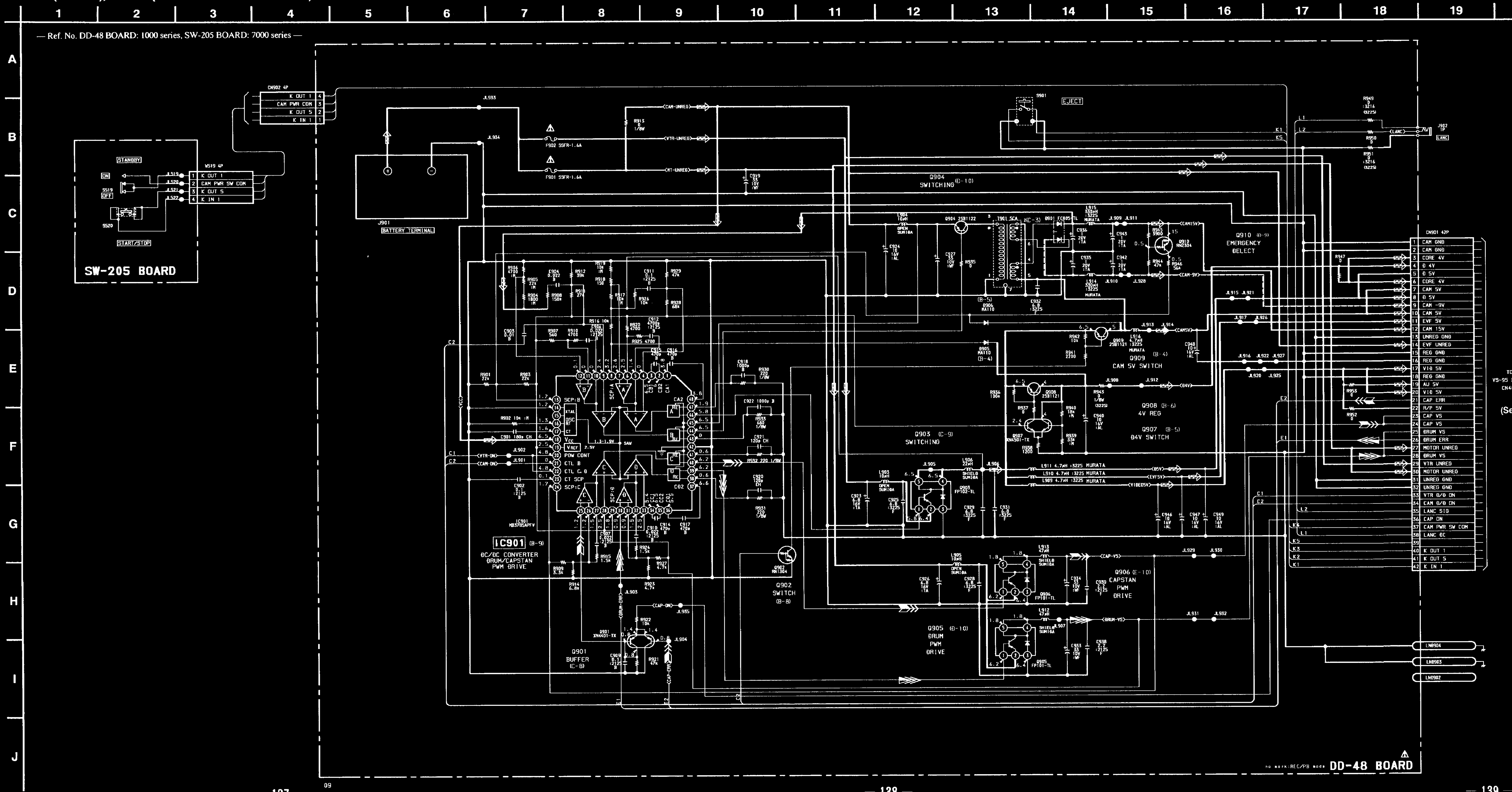

C902
R909
R914
C901
R902
R901
R903
R906
R905
R904
C903
C906
R907
J902
REMOTE
R910
C904
R908
IC901
R911
R912
R919
R915
C907
R916
R918
R917
R927
R920
R924
C910
C912
R925
R923
C914
C911
C950
R950
Q902
C909
Q901
R921
C917
R928
R926
C915
R929
R931
C920
R932
R933
C918
R930
C916
R935
R922
C942
R946
Q903
C921
C922
C925
Q904
R944
C943
R945
Q910
R947
L916
C931
C923
Q905
L911
C938
C926
R953
L909
L910
C929
C928
Q906
R952
C939
CN902
F901
F902
1-644-988-
11
7
8
9
10
11

SW-205 BOARD
(CONDUCTOR SIDE)


S520
START/STOP
S519
STBY
W519
1 2 3 4
1-644-979-
11

DD-48 (POWOR), SW-205 (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J
SW-205 BOARD
STANDBY
ON
S519
OFF
S520
START/STOP
W519 4P
1 K OUT 1
2 CAM PWR SW COM
3 K OUT 5
4 K IN 1
CN902 4P
K OUT 1 4
CAM PWR COM 3
K OUT 5 2
K IN 1 1
J901
BATTERY TERMINAL
F902 SSFR-1.6A
F901 SSFR-1.6A
<CAM-UNREG>
<VTR-UNREG>
<MT-UNREG>
S901
EJECT
Q904 (D-10)
SWITCHING
Q904 2SB1122
T901 SCA
D901 FC805-TL
L915 330μH :3225 MURATA
L914 330μH :3225 MURATA
<CAM15V>
<CAM-9V>
Q910 (D-9)
EMERGENCY
DELECT
Q910 RN2304
Q909 2SB1121
Q909
CAM 5V SWITCH
<CAM5V>
Q908 (H-6)
4V REG
Q907 (B-5)
D4V SWITCH
Q903 (C-9)
SWITCHING
Q903 FP102-TL
L911 4.7μH :3225 MURATA
L910 4.7μH :3225 MURATA
L909 4.7μH :3225 MURATA
<D5V>
<EVF5V>
<VIDEO5V>
<D4V>
IC901 (B-9)
DC/DC CONVERTER
DRUM/CAPSTAN
PWM DRIVE
IC901 MB3785APFV
SCP:B
XTAL
OSC
CT
Vcc
Vref
POW CONT
CTL B
CTL C,D
CT SCP
SCP:C
<VTR-ON>
<CAM-ON>
Q902
SWITCH
(B-8)
Q901
BUFFER
(C-8)
Q901 XN4401-TX
<CAP-ON>
<CAP-VS>
<DRUM-VS>
Q906 (E-10)
CAPSTAN
PWM
DRIVE
Q905 (D-10)
DRUM
PWM
DRIVE
Q906 FP101-TL
Q905 FP101-TL
R949 :3216 (2225)
R950
R951 :3216 (2225)
<LANC>
J902 1P
LANC
K1 K5 L1 L2 E1 E2 C1 C2 K3 K2
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39
40 K OUT 1
41 K OUT 5
42 K IN 1
LND904
LND903
LND902
DD-48 BOARD

TO
VS-95 BOARD
CN404

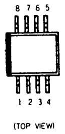
(See Page 107)

- **SIGNAL PATH**

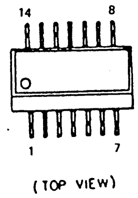
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⇒	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⇒»	
Ref. signal			

4-3. SEMICONDUCTORS

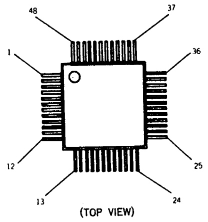
BR9021AF
LM358DR


8 7 6 5
1 2 3 4
(TOP VIEW)

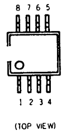
AN2512S


14
8
1
7
(TOP VIEW)

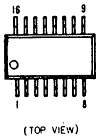
CXA1202R
CXA1208R
CXA1481AR
CXA1488R


48
37
1
36
12
25
13
24
(TOP VIEW)

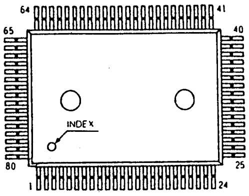
CXA1211M
NJM2234M
NJM3414M


8 7 6 5
1 2 3 4
(TOP VIEW)

CXA1452
CXL5502M

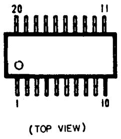

16
9
1
8
(TOP VIEW)

CXD2100Q
μPD75316GF

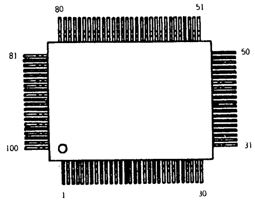

64
41
65
40
INDEX
80
25
1
24

MARKING SIDE VIEW

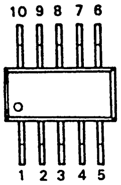
CXD1250AN
CXD2104AN
MB88346BPFV
μPD7564G-540


20
11
1
10
(TOP VIEW)

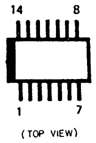
CXP80624-416R/434R


80
51
81
50
100
31
1
30

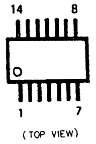
LB1830M


10 9 8 7 6
1 2 3 4 5

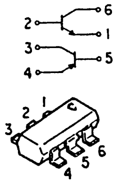
LM324DR


14
8
1
7
(TOP VIEW)

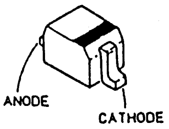
TL1596CDB


14
8
1
7
(TOP VIEW)

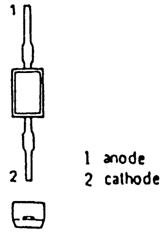
XP4601


2
6
1
3
4
5
1
2
3
4
5
6

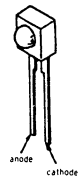
MA110


ANODE
CATHODE

TLS221


1
2
1 anode
2 cathode

BR4371F


anode
cathode

4-3. SEMICONDUCTORS

BR9021AF
LM358DR

AN2513S

14
8
1
7
(TOP VIEW)

CXA1202R
CXA1206R
CXA1401AR
CXA1406R

CXA1211M
NJM2234M
NJM3414M

CXA1452
CXL5502M

CXD2106Q
µPD75316GF

(BOTTOM VIEW)

CXD1250AN
CXD2104AN
MB88346BPFV
µPD7564G-549

CXP80624-418R/434R

LB1836M

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6
1
2
3
4
5

LM324DR

14
8
1
7
(TOP VIEW)

TL1590CDB

14
8
1
7
(TOP VIEW)

XP4601

MA110

ANODE
CATHODE

TLS221

1
2
1 anode
2 cathode

SR4371F

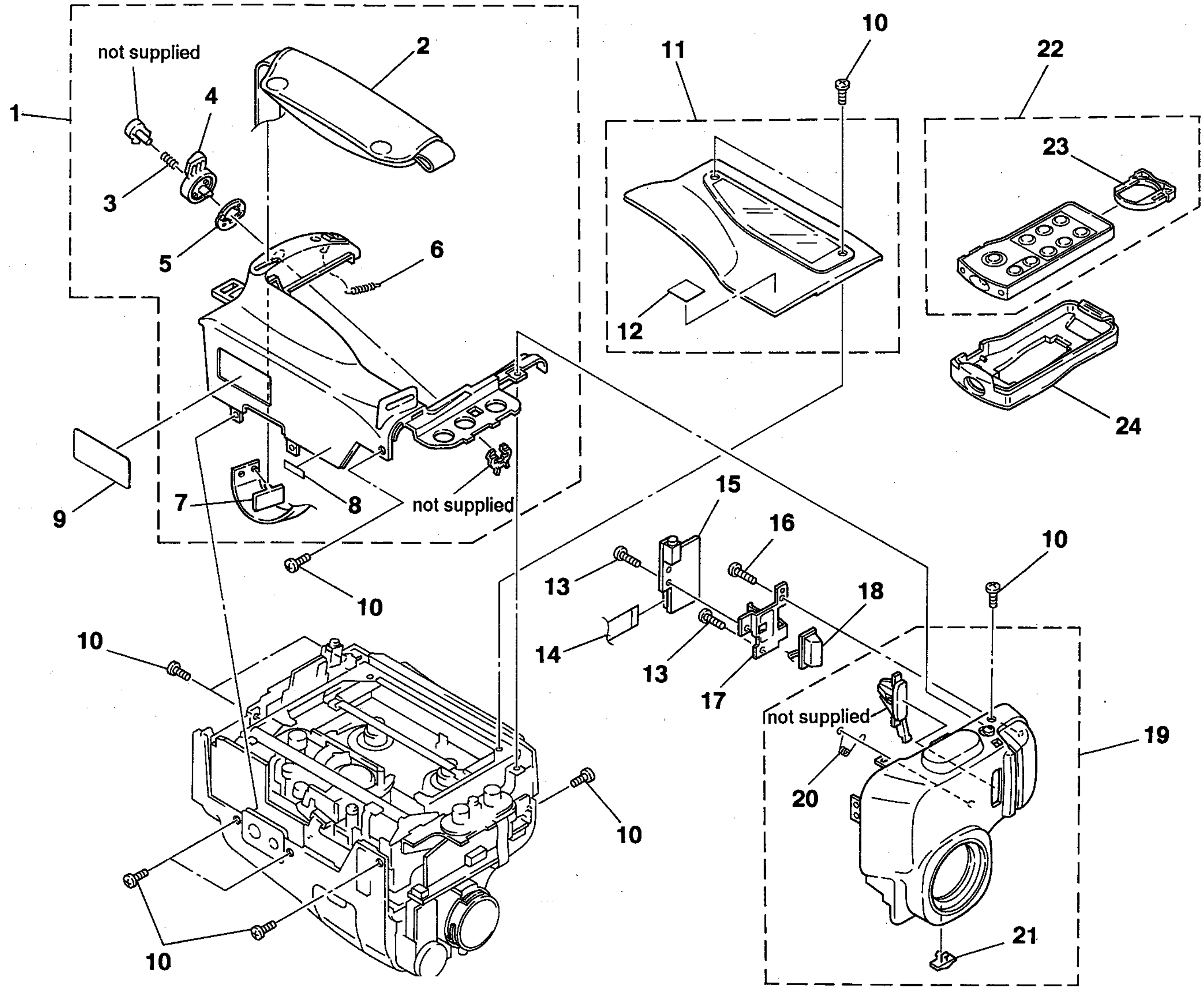
SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

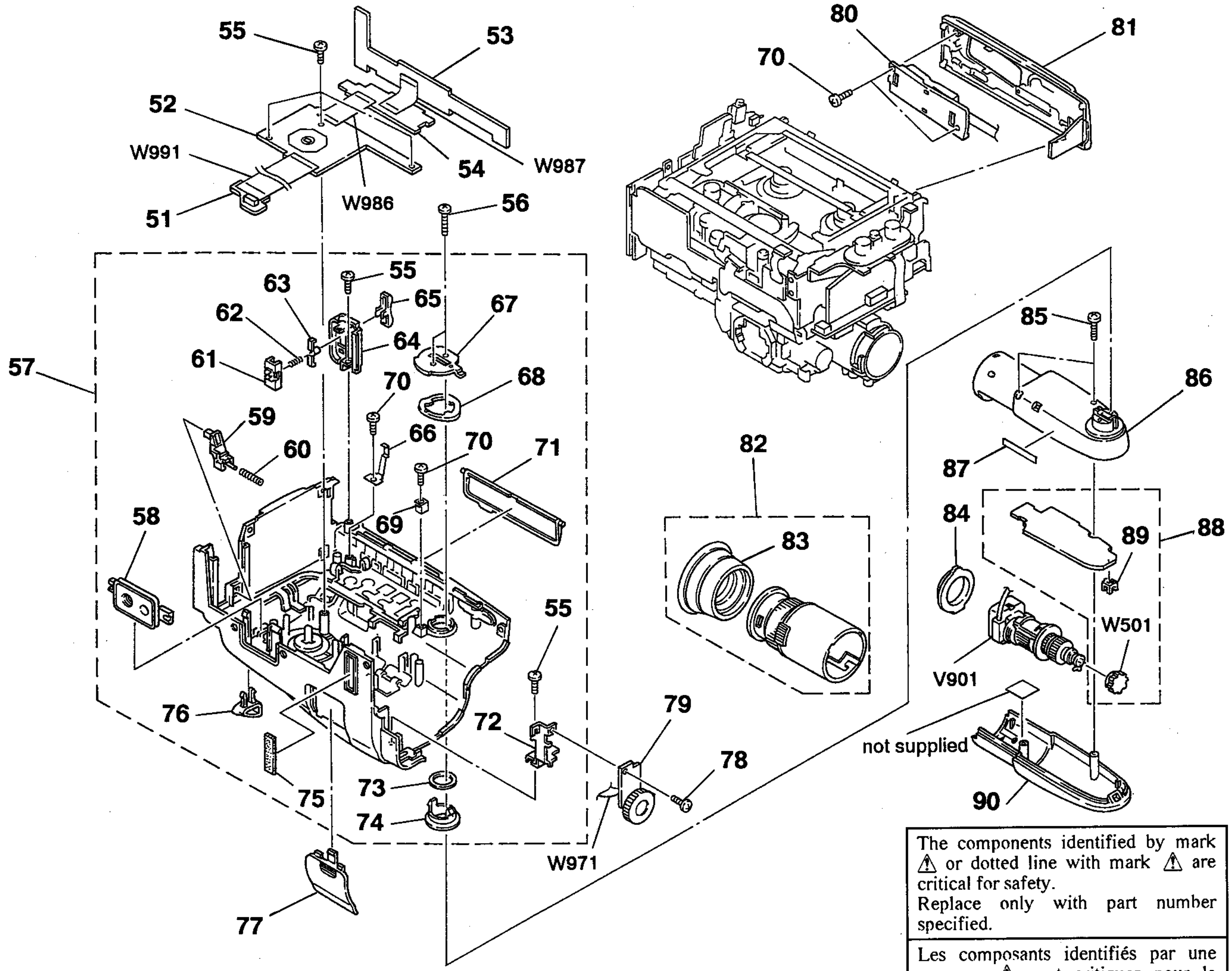
5-1. CABINET (L) AND F PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3941-893-1	CABINET (L) ASSY (TR31:US)	
1	X-3942-282-1	CABINET (L) ASSY (EXCEPT TR31:US)	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
* 8	3-704-367-01	LABEL (TR31:US)	
* 9	3-951-286-01	LABEL, MODEL NUMBER (TR303/TR303PK)	
* 9	3-949-003-01	LABEL, MODEL NUMBER (U/C)(TR31)	
10	3-719-381-01	SCREW (M2X4)	
11	X-3942-391-1	LID ASSY CASSETTE (TR303/TR303PK)	
11	X-3941-895-1	LID ASSY, CASSETTE (TR31)	
* 12	3-703-713-41	STICKER, SONY SYMBOL (10)	

Ref. No.	Part No.	Description	Remark
13	3-713-790-21	SCREW (M2X6), TAPPING, P3	
14	1-696-487-11	CABLE, FLAT (FFC-90)	
15	A-7063-267-A	MA-149 BOARD, COMPLETE	
16	3-719-601-01	SCREW (B2X5), TAPPING	
* 17	3-949-000-01	RETAINER, MICROPHONE	
18	A-7091-800-A	MICROPHONE UNIT	
19	X-3941-891-1	PANEL ASSY, F	
20	3-947-357-01	SPRING, TORSION	
21	3-945-269-01	KNOB, S	
22	1-465-927-71	REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR31)	
22	1-465-927-81	REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR303/TR303PK)	
23	3-708-412-01	LID, REMOTE COMMANDER	
24	3-943-154-11	HOLDER (B), REMOTE CONTROL	

5-2. CABINET (R) AND EVF ASSEMBLIES

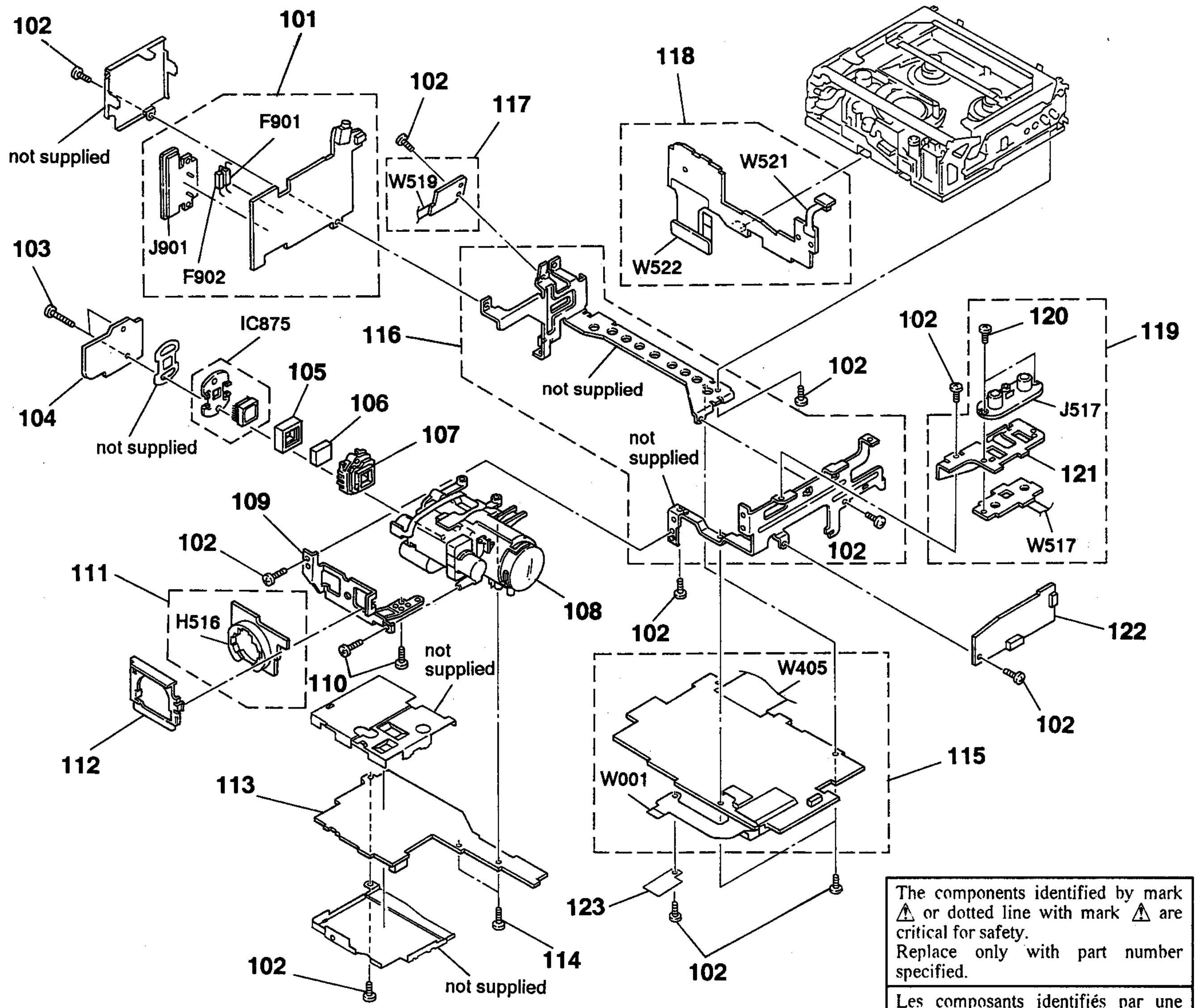


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
51	A-7071-657-A	CN-65 BOARD, COMPLETE	
52	A-7071-655-A	CF-32 BOARD, COMPLETE	
53	A-7071-653-A	VK-27 BOARD, COMPLETE	
54	A-7071-654-A	ED-35 BOARD, COMPLETE	
55	3-713-790-21	SCREW (M2X6), TAPPING, P3	
56	3-740-546-41	SCREW (M2X10)	
57	X-3941-892-1	CABINET (R) ASSY	
58	3-942-911-01	SCREW, TRIPOD	
59	3-948-990-01	LOCK, BATTERY	
60	3-426-508-00	SPRING, COMPRESSION	
61	3-948-839-01	BLIND, POWER	
62	3-303-973-00	SPRING, COMPRESSION	
63	3-946-186-01	PUSH BUTTON, POWER	
64	3-948-975-01	POWER (BASE)	
65	3-946-248-01	BUTTON, POWER	
66	3-948-988-01	SPRING, LEAF, VK	
67	3-747-111-01	PLATE, LOCK, TILT	
68	3-747-110-01	SPRING, LEAF, TILT	
69	3-747-178-01	REINFORCEMENT, TILT LOCK	
70	3-719-601-01	SCREW (B2X5), TAPPING	
71	3-948-976-01	DOOR, CONTROL	
* 72	3-948-987-01	FRAME, MF	
73	3-747-112-01	RING, TILT	
74	3-747-109-01	SLEEVE, EVF	
75	3-949-008-01	SHEET, FOOT	
76	3-948-989-01	KNOB, BATTERY	
77	X-3942-113-1	LID ASSY, BATTERY, LITHIUM (TR31:US)	
78	3-713-786-51	SCREW (M2X3)	
79	A-7071-656-A	MF-191 BOARD, COMPLETE	
80	1-692-257-11	SWITCH, PUSH (ZOOM)	
81	X-3941-894-1	LID ASSY, LS	
82	X-3941-603-1	HOLDER ASSY, FINDER	
83	3-946-426-01	EYE CUP	
84	3-747-116-01	COVER, CRT	
85	3-713-790-31	SCREW (M2X8), TAPPING, P3	
86	X-3940-706-1	CABINET (L) ASSY, EVF	
* 87	3-744-894-11	LABEL, EVF	
88	A-7063-183-A	VF-42 BOARD, COMPLETE (3120)	
89	3-942-888-01	HOLDER, LED	
90	3-943-077-01	CABINET (R), EVF	
⚠V901	1-452-565-11	CRT ASSY	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W986	1-696-621-11	CABLE FLEXIBLE	
W987	1-696-622-11	CABLE FLEXIBLE (FP-591)	
W991	1-696-483-11	CABLE FLAT (FFC-86)	

5-3. MAIN BOARDS ASSEMBLY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F901
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W519
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J901
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IC875
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not supplied
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J517
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not supplied
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W405
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W001
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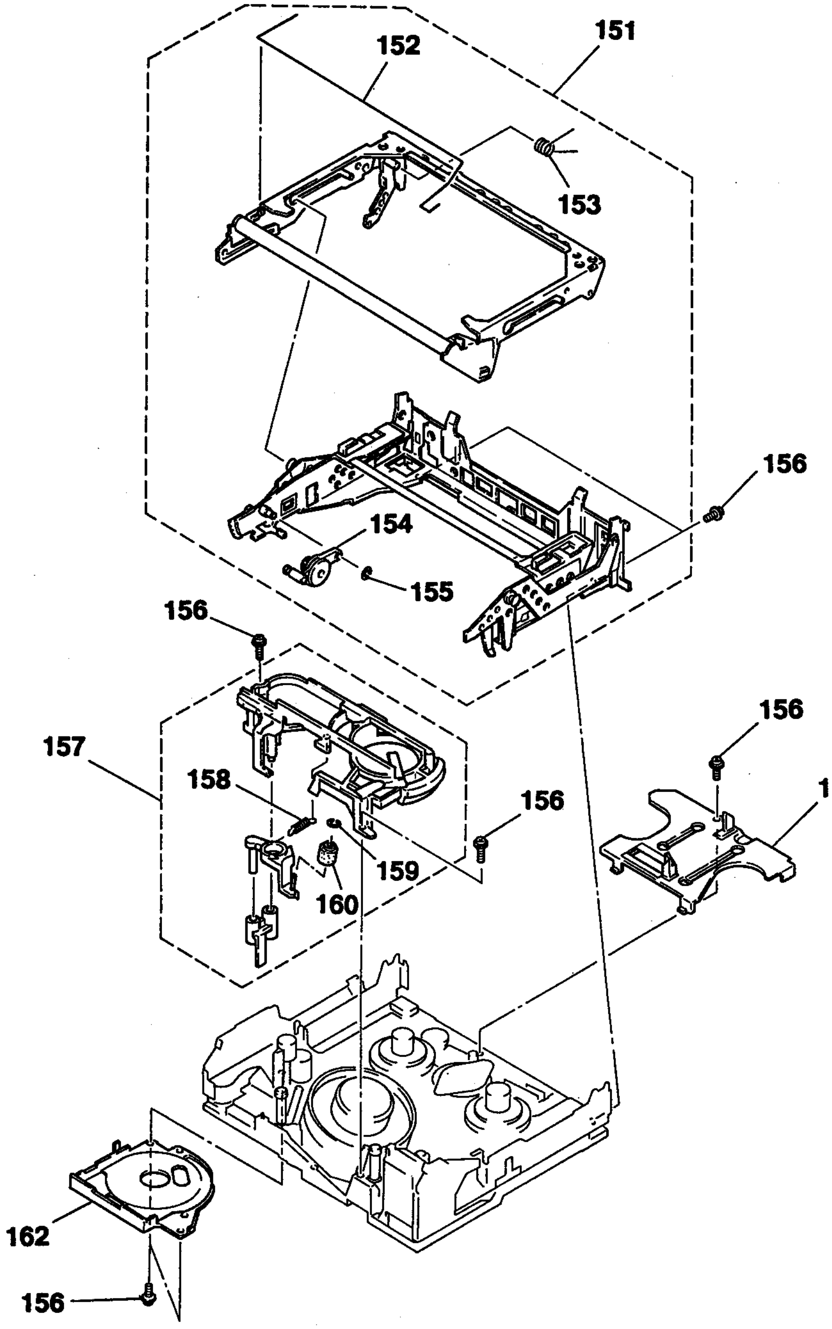
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	A-7063-264-A	DD-48 BOARD, COMPLETE	
102	3-713-786-51	SCREW (M2X3)	
103	3-947-268-01	SCREW (B TIGHT) (2), TAPPING	
104	A-7063-262-A	CD-92 BOARD, COMPLETE	
105	3-946-857-01	RUBBER (S), SEAL	
106	1-547-558-21	FILTER BLOCK, OPTICAL	
107	3-946-856-01	ADAPTOR (H), CCD FITTING	
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
* 109	3-949-001-01	FRAME, LENS	
110	3-713-790-21	SCREW (M2X6), TAPPING, P3	
111	A-7071-652-A	LI-44 BOARD, COMPLETE	
112	3-948-842-01	HOLDER, LI	
113	A-7063-261-A	VC-122 BOARD, COMPLETE	
114	3-719-601-01	SCREW (B2X5), TAPPING	
115	A-7063-260-A	VS-95 BOARD, COMPLETE	
* 116	X-3942-209-1	FRAME (UPPER LOWER) ASSY	
117	A-7071-651-A	SW-205 BOARD, COMPLETE	
118	A-7063-263-A	SL-27 BOARD, COMPLETE	
119	A-7063-266-A	JK-91 BOARD, COMPLETE	
120	3-719-381-01	SCREW (M2X4)	
* 121	3-948-974-01	FRAME (M), JACK	
122	A-7063-265-A	AU-138 BOARD, COMPLETE	
123	3-951-136-01	SHIELD, DRUM	
⚠F901	1-532-778-21	FUSE	
⚠F902	1-532-778-21	FUSE	
H516	1-550-104-32	HOLDER, BATTERY	
J517	1-537-142-21	TERMINAL BOARD	
J901	1-537-281-41	TERMINAL BOARD	
W001	1-696-489-11	CABLE, FLEXIBLE (FP-588)	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	CABLE, FLEXIBLE (FP-589)	
IC875	A-7030-368-A	CCD BLOCK ASSY (AUTO)	

5-4. CASSETTE COMPARTMENT ASSEMBLY



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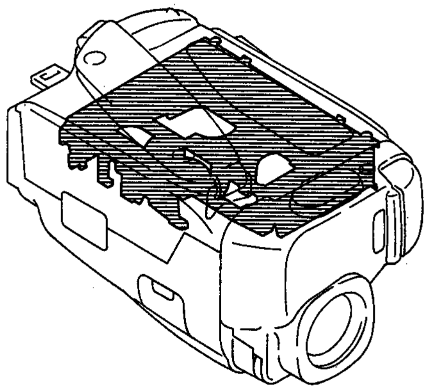
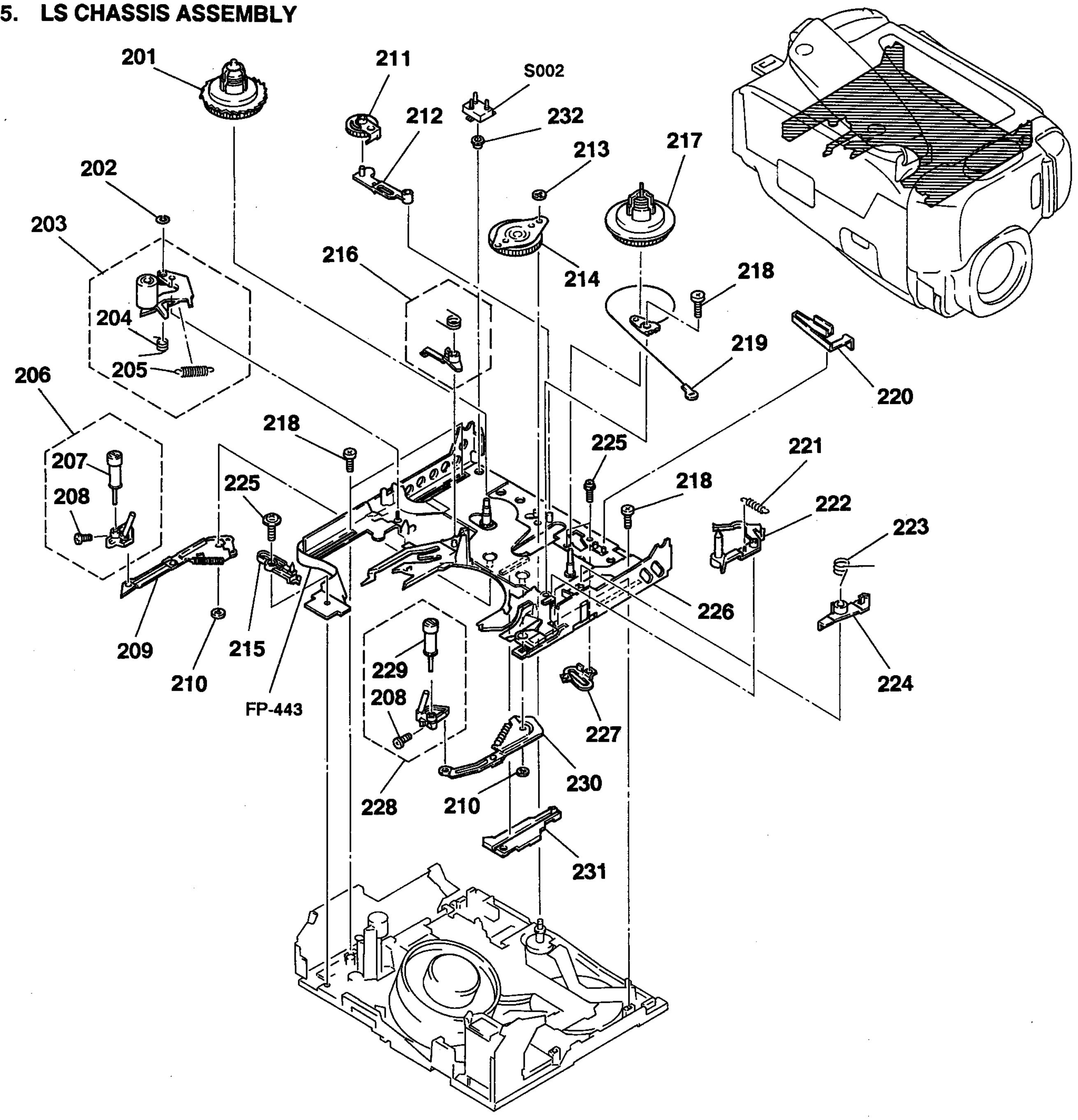


Ref. No.	Part No.	Description	Remark
151	A-7040-312-A	CASSETTE COMPARTMENT BLOCKASSY	
152	3-945-773-01	BAR, TORSION	
153	3-945-771-01	SPRING, TORSION	
154	X-3941-287-2	DAMPER ASSY	
155	3-315-384-31	WASHER, STOPPER	
156	3-947-503-01	SCREW (M1.4X2.5)	
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
158	3-945-760-01	SPRING, TENSION	
159	3-321-393-01	WASHER, STOPPER	
160	X-3726-817-3	ROLLER ASSY, HC	
161	X-3941-280-1	RETAINER ASSY, GOOSENECK	
162	3-945-733-01	COVER, CAPSTAN	

5-5. LS CHASSIS ASSEMBLY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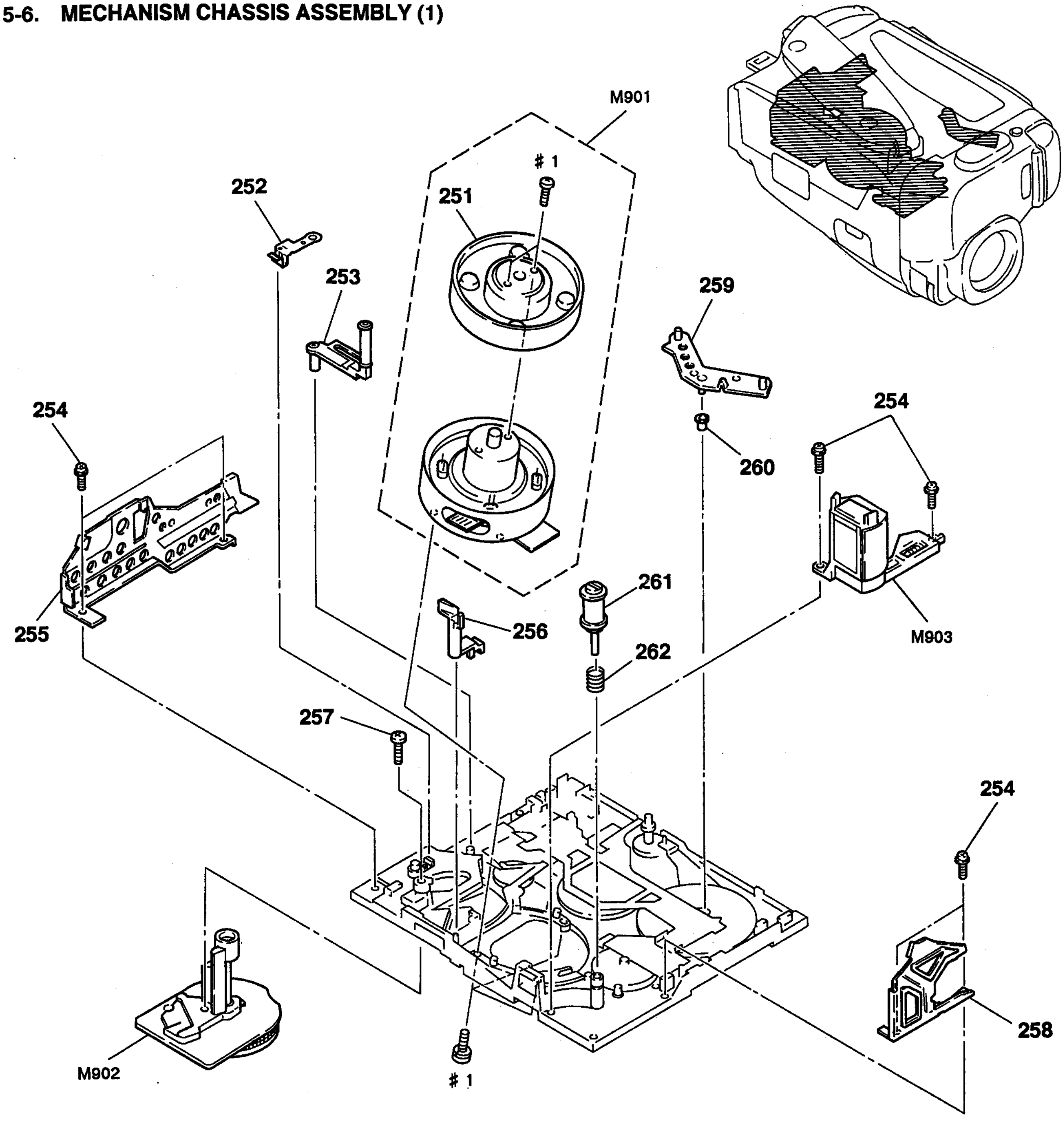
Ref. No.	Part No.	Description	Remark
201	X-3941-274-1	TABLE ASSY, REEL, T	
202	3-331-007-21	WASHER	
203	X-3941-271-1	ARM ASSY, PINCH	
204	3-945-743-01	SPRING, TORSION	
205	3-945-783-01	SPRING, TENSION	
206	A-7040-307-A	GUIDE (BASE) (T) BLOCK ASSY	
207	X-3941-424-1	ROLLER ASSY, TG6	
208	3-947-504-01	SCREW (M1.2X2)	
209	X-3941-267-1	ARM (T) ASSY, GUIDE	
210	3-669-465-00	WASHER (1.5), STOPPER	
211	X-3941-273-1	SOFT ASSY, T	
212	3-945-753-01	ARM, T SOFT	
213	3-726-829-01	WASHER, STOPPER	
214	X-3941-279-1	GEAR ASSY, GOOSENECK	
215	3-947-644-01	RETAINER, TG5 (BASE)	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
217	X-3941-275-1	TABLE ASSY, REEL, S	
218	3-945-756-01	SCREW (M1.4X3)	
219	X-3941-277-1	STRING BLOCK ASSY	
220	3-945-801-01	BRAKE, S SOFT	
221	3-948-810-01	SPRING, TENSION	
222	X-3941-276-1	TG1 ASSY	
223	3-945-752-01	SPRING, TORSION	
224	3-945-799-01	BRAKE, S HARD	
225	3-947-503-01	SCREW (M1.4X2.5)	
226	X-3941-265-1	CHASSIS ASSY, LS	
227	3-945-784-01	PLATE, CAM, LS	
228	A-7040-306-A	GUIDE (BASE) (S) BLOCK ASSY	
229	X-3942-129-1	ROLLER ASSY (SUS), TG3	
230	X-3941-266-1	ARM (S) ASSY, GUIDE	
231	3-945-837-01	SLIDER, GL	
232	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3KEY) (REC PROOF, ME/MP, MP/MP-HG)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)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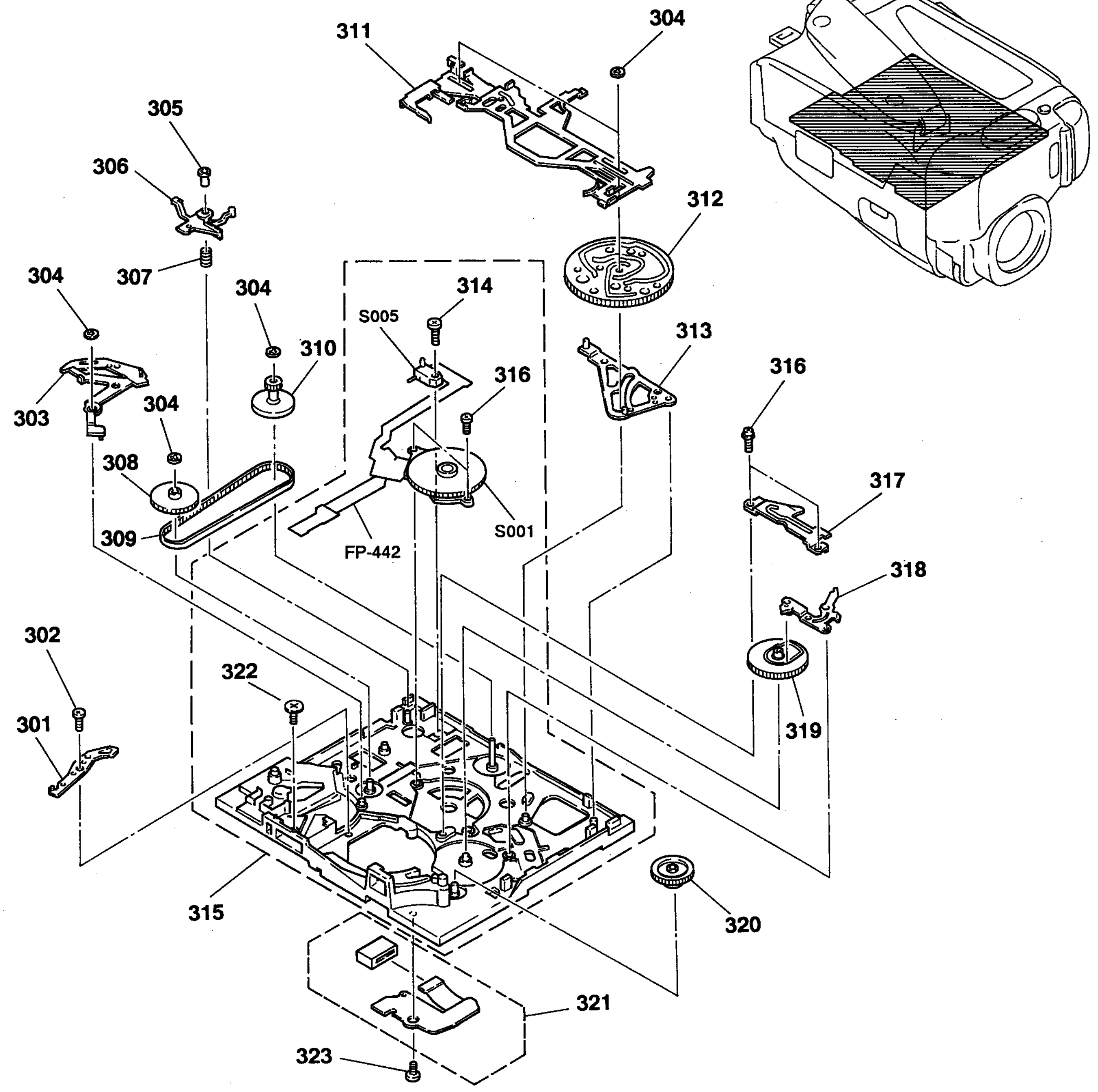
Ref. No.	Part No.	Description	Remark
251	A-7049-501-A	DRUM ASSY, UPPER (DGR-78-R)	
252	3-945-822-01	SPRING, LEAF, TG7 ARM	
253	A-7040-305-A	ARM BLOCK ASSY, TG7	
254	3-947-503-01	SCREW (M1.4X2.5)	
255	X-3941-255-1	PLATE (T) ASSY, SIDE	
256	3-945-735-01	ARM, HC CONVERSION	
257	3-713-786-71	SCREW (M2X5)	
258	3-945-691-01	PLATE (S), SIDE	
259	3-945-701-01	ARM, LS	
260	3-945-702-01	ROLLER, LS	
261	X-3941-262-1	ROLLER ASSY, TG2	
262	3-945-774-01	SPRING, COMPRESSION	
M901	A-7048-564-A	DRUM ASSY (DGH-78A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)



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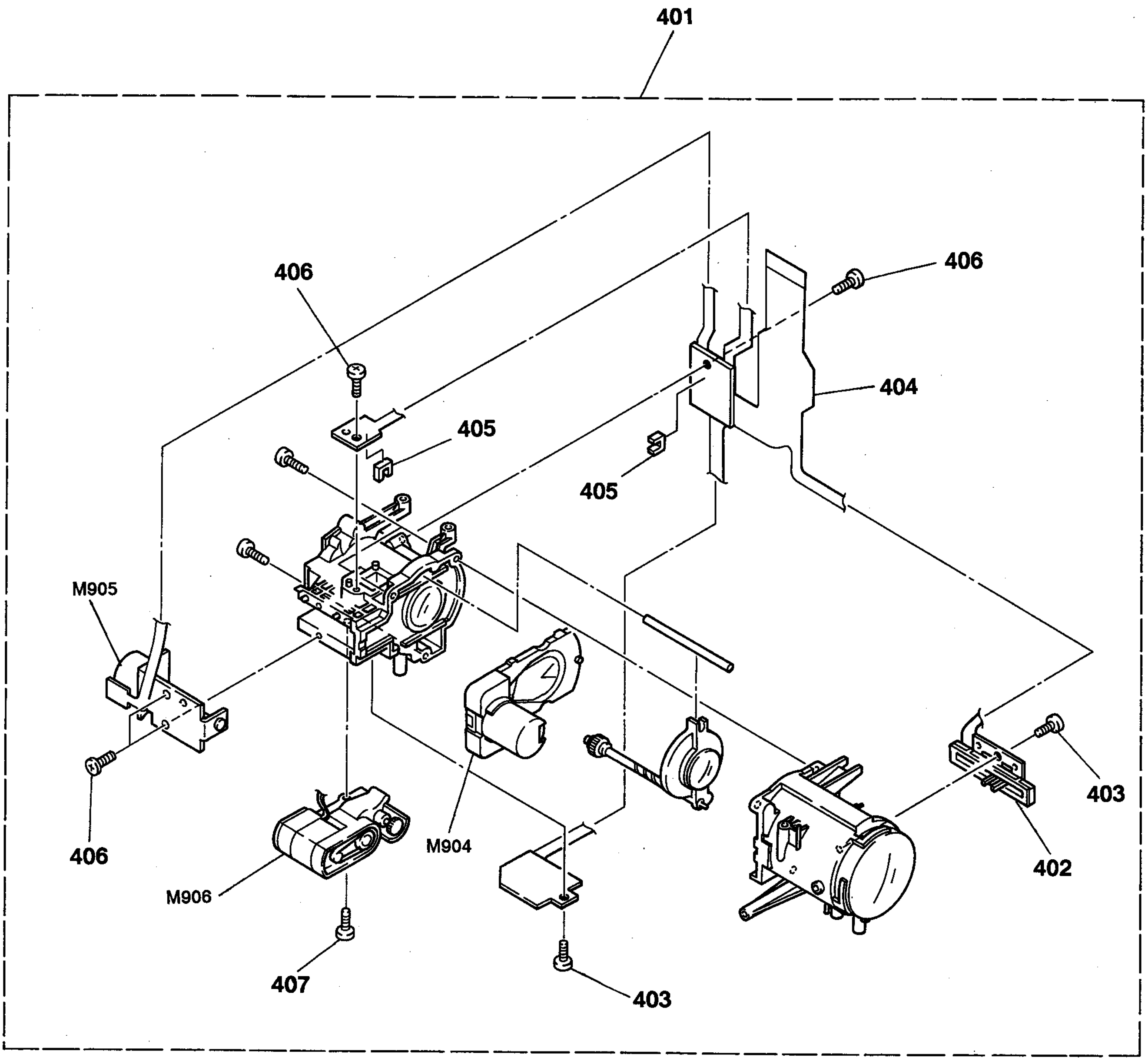
Ref. No.	Part No.	Description	Remark
301	3-945-734-01	ARM, HC DRIVING	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
303	X-3941-259-1	ARM ASSY, PINCH PRESS	
304	3-726-829-01	WASHER, STOPPER	
305	3-945-730-01	SLEEVE, EJECT	
306	3-945-706-01	LEVER, EJECT	
307	3-945-729-01	SPRING, COMPRESSION	
308	X-3941-256-1	GEAR ASSY, CHANGE	
309	3-944-539-01	BELT, RELAY	
310	3-945-695-01	PULLEY, RELAY	
311	X-3941-260-1	SLIDER ASSY, M	
312	3-945-696-01	CAM	
313	X-3941-258-1	ARM ASSY, GL	
314	3-713-786-71	SCREW (M2X5)	
315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
316	3-947-503-01	SCREW (M1.4X2.5)	
317	3-945-722-01	RETAINER, GEAR	
318	X-3941-257-1	ARM ASSY, FF	
319	3-945-697-01	GEAR (B), L	
320	3-945-700-01	GEAR (A), L	
321	A-7040-311-A	FP-444 ASSY	
322	3-946-848-01	SCREW, TG6 ADJUSTMENT	
323	3-945-756-01	SCREW (M1.4X3)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-8. ZOOM LENS ASSEMBLY (VCL-6210WC)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Ref. No.	Part No.	Description	Remark
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
402	3-708-446-01	METER, POTENTIAL	
403	3-708-053-01	SCREW, FB FITTING	
404	3-708-493-01	FLEXIBLE	
405	3-708-435-01	PHOTO INTERRUPTER	

Ref. No.	Part No.	Description	Remark
406	3-707-946-01	SCREW	
407	3-708-450-01	SCREW, PZ	
M904	3-708-494-01	METER ASSY, IG (IRIS)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)	

SECTION 6
ELECTRICAL PARTS LIST

AU-138 **CD-92**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description				Remark
*	A-7063-265-A	AU-138 BOARD, COMPLETE **********************				
		(CAPACITOR)				
C601	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C605	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	
C607	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C614	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C615	1-164-373-11	CERAMIC CHIP	0.033uF		25V	
C617	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C618	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C627	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C628	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C629	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C630	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	
C631	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C632	1-162-951-11	CERAMIC CHIP	68PF	5%	50V	
C636	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C637	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C639	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C640	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C641	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C643	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C645	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C647	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C649	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C651	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C654	1-162-977-11	CERAMIC CHIP	0.0018uF	10%	50V	
C655	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C657	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C660	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C691	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C695	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C699	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	
		(CONNECTOR)				
CN601	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P				
CN602	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P				
CN603	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P				
		(IC)				
IC601	8-759-823-19	IC	CXA1488RR			
IC602	8-749-923-29	IC	RS-20E-T			
		(COIL)				
L601	1-410-384-31	INDUCTOR CHIP	18uH			
		(RESISTOR)				
R603	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R604	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R605	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R607	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W	
R609	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R614	1-216-817-11	METAL CHIP	470	5%	1/16W	
R615	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R616	1-216-864-11	METAL CHIP	0	5%	1/16W	
R617	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R618	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R619	1-216-864-11	METAL CHIP	0	5%	1/16W	
R620	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R622	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R625	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R630	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R632	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R633	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R634	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R637	1-216-864-11	METAL CHIP	0	5%	1/16W	
R677	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R681	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R682	1-216-849-11	METAL CHIP	220K	5%	1/16W	

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Ref. No.	Part No.	Description				Remark
*	A-7063-262-A	CD-92 BOARD, COMPLETE **********************				
		(CAPACITOR)				
C875	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V	
C876	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C877	1-128-008-11	ELECT CHIP	3.3uF	20%	35V	
C879	1-162-637-11	CERAMIC CHIP	0.47uF		16V	
C880	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C881	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C882	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C883	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C884	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C888	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	

Ref. No.	Part No.	Description	Remark
		(CONNECTOR)	
CN875	1-573-308-11	CONNECTOR, BOARD TO BOARD 16P	
		(DIODE)	
D875	8-719-800-76	DIODE 1SS226	
D876	8-719-404-46	DIODE MA110	
D877	8-719-820-05	DIODE 1SS181	
D878	8-719-404-46	DIODE MA110	
		(COIL)	
L875	1-412-064-11	INDUCTOR CHIP 100uH	
		(TRANSISTOR)	
Q875	8-729-425-64	TRANSISTOR 2SD2216Q	
Q876	8-729-427-72	TRANSISTOR XP4501	
Q877	8-729-232-86	TRANSISTOR 2SK1875	
		(RESISTOR)	
R877	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R878	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R879	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R880	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R881	1-216-819-11	METAL CHIP 680 5% 1/16W	
R882	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R883	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R884	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R885	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R886	1-216-809-11	METAL CHIP 100 5% 1/16W	
R887	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	

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A-7071-655-A CF-32 BOARD COMPLETE
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Ref. No.	Part No.	Description	Remark
		(CONNECTOR)	
CN993	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
		(DIODE)	
D992	8-719-404-46	DIODE MA110	
		(RESISTOR)	
R991	1-216-295-00	METAL CHIP 0 5% 1/10W	
R992	1-216-295-00	METAL CHIP 0 5% 1/10W	
		(SWITCH)	
S991	1-692-111-11	SWITCH, KEY BOARD (FADER)	
S993	1-692-111-11	SWITCH, KEY BOARD (DATE)	
S995	1-692-111-11	SWITCH, KEY BOARD (COUNTER RESET)	
S996	1-692-111-11	SWITCH, KEY BOARD (TIME)	
S997	1-692-024-21	SWITCH, ROTARY (PROGRAM AE)	
		(SPEAKER)	
SP991	1-529-107-11	BUZZER, PIEZOELECTRIC	

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A-7071-657-A CN-65 BOARD COMPLETE
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Ref. No.	Part No.	Description	Remark
		(CONNECTOR)	
CN518	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
		(FLAT CABLE)	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

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*⚠ A-7063-264-A DD-48 BOARD, COMPLETE
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Ref. No.	Part No.	Description	Remark
		(CAPACITOR)	
C901	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C902	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C904	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C906	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C907	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C909	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C910	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C911	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C912	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C914	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C915	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C916	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C917	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C920	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C921	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C922	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C923	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C924	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C925	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C926	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C927	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C928	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C929	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C931	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C932	1-165-178-11	CERAMIC CHIP 6.8uF 16V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
C933	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C934	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C935	1-135-177-21	TANTALUM CHIP	1uF	20%	20V	
C936	1-135-177-21	TANTALUM CHIP	1uF	20%	20V	
C938	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C939	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C940	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C942	1-135-177-21	TANTALUM CHIP	1uF	20%	20V	
C943	1-135-177-21	TANTALUM CHIP	1uF	20%	20V	
C946	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C947	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C948	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C949	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C950	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
		〈 CONNECTOR 〉				
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P				
CN902	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P				
		〈 DIODE 〉				
D901	8-719-981-59	DIODE	FC805			
D905	8-719-404-46	DIODE	MA110			
D906	8-719-404-46	DIODE	MA110			
		〈 FUSE 〉				
⚠F901	1-532-778-21	FUSE, MICRO	1.6A 125V			
⚠F902	1-532-778-21	FUSE, MICRO	1.6A 125V			
		〈 IC 〉				
IC901	8-759-060-94	IC	MB3785APFV-G-BND-ER			
		〈 JACK 〉				
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)				
J902	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)				
		〈 COIL 〉				
L903	1-424-522-21	COIL, CHOKE	10uH			
L904	1-424-522-21	COIL, CHOKE	10uH			
L905	1-424-522-21	COIL, CHOKE	10uH			
L906	1-424-523-21	COIL, CHOKE	22uH			
L909	1-412-028-11	INDUCTOR CHIP	4.7uH			
L910	1-412-028-11	INDUCTOR CHIP	4.7uH			
L911	1-412-028-11	INDUCTOR CHIP	4.7uH			
L912	1-424-524-21	COIL, CHOKE	47uH			
L913	1-424-524-21	COIL, CHOKE	47uH			
L914	1-412-034-11	INDUCTOR CHIP	330uH			
L915	1-412-034-11	INDUCTOR CHIP	330uH			
L916	1-412-028-11	INDUCTOR CHIP	4.7uH			

Ref. No.	Part No.	Description				Remark
		〈 TRANSISTOR 〉				
Q901	8-729-403-27	TRANSISTOR	XN4401			
Q902	8-729-402-42	TRANSISTOR	RN1304			
Q903	8-729-823-84	TRANSISTOR	FP102			
Q904	8-729-804-41	TRANSISTOR	2SB1122-S			
Q905	8-729-823-82	TRANSISTOR	FP101			
Q906	8-729-823-82	TRANSISTOR	FP101			
Q907	8-729-402-81	TRANSISTOR	XN4501			
Q908	8-729-805-25	TRANSISTOR	2SB1121			
Q909	8-729-805-25	TRANSISTOR	2SB1121			
Q910	8-729-014-20	TRANSISTOR	RN2304			
		〈 RESISTOR 〉				
R901	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R902	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R903	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R904	1-218-698-11	METAL CHIP	1.8K	0.50%	1/16W	
R905	1-218-724-11	METAL CHIP	22K	0.50%	1/16W	
R906	1-218-708-11	METAL CHIP	4.7K	0.50%	1/16W	
R907	1-216-818-11	METAL CHIP	560	5%	1/16W	
R908	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R909	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R910	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R911	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R912	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R913	1-216-296-00	METAL CHIP	0	5%	1/8W	
R914	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R915	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R916	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R917	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R918	1-216-811-11	METAL CHIP	150	5%	1/16W	
R919	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R920	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R921	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R922	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R923	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R924	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R925	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R926	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R927	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R928	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R929	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R930	1-216-182-00	METAL GLAZE	220	5%	1/8W	
R931	1-216-182-00	METAL GLAZE	220	5%	1/8W	
R932	1-216-182-00	METAL GLAZE	220	5%	1/8W	
R933	1-216-194-00	METAL CHIP	680	5%	1/8W	
R935	1-216-864-11	METAL CHIP	0	5%	1/16W	
R936	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R937	1-216-864-11	METAL CHIP	0	5%	1/16W	
R938	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R939	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R940	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R941	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R942	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R943	1-216-296-00	METAL CHIP 0 5% 1/8W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R946	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R947	1-216-295-00	METAL CHIP 0 5% 1/10W	
R949	1-216-296-00	METAL CHIP 0 5% 1/8W	
R950	1-216-864-11	METAL CHIP 0 5% 1/16W	
R951	1-216-296-00	METAL CHIP 0 5% 1/8W	
R952	1-216-864-11	METAL CHIP 0 5% 1/16W	
R953	1-216-864-11	METAL CHIP 0 5% 1/16W	
		(SWITCH)	
S901	1-572-467-11	SWITCH, PUSH (1 KEY)(EJECT)	
		(TRANSFORMER)	
T901	1-450-874-21	TRANSFORMER, DC-DC CONVERTER	

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Ref. No.	Part No.	Description	Remark
	A-7071-654-A	ED-35 BOARD COMPLETE ********************	
		(DIODE)	
D986	8-719-404-46	DIODE MA110	
D987	8-719-404-40	DIODE MA121	
		(SWITCH)	
S986	1-571-275-31	SWITCH, SLIDE (BEEP)	
S987	1-692-111-11	SWITCH, KEY BOARD (SUMMER TIME)	
S988	1-571-275-31	SWITCH, SLIDE (REMOTE COMMANDER)	
S989	1-692-111-11	SWITCH, KEY BOARD (AREA)	
S990	1-571-275-31	SWITCH, SLIDE (EDIT)	
		(FLAT CABLE)	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	

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Ref. No.	Part No.	Description	Remark
*	A-7063-266-A	JK-91 BOARD, COMPLETE *********************	
	3-719-381-01	SCREW (M2X4)	
*	3-948-974-01	FRAME (M), JACK	
		(JACK)	
J517	1-537-142-21	TERMINAL BOARD (VIDEO, AUDIO, RFU DC OUT)	
		(FLAT CABLE)	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	

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Ref. No.	Part No.	Description	Remark
*	A-7071-652-A	LI-44 BOARD, COMPLETE *********************	
		(CONNECTOR)	
* CN516	1-580-055-21	PIN, CONNECTOR 2P	
		(HOLE ELEMENT)	
H516	1-550-104-32	HOLDER, BATTERY	

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Ref. No.	Part No.	Description	Remark
	A-7063-267-A	MA-149 BOARD, COMPLETE **********************	
		(CAPACITOR)	
C551	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C552	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C553	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C554	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C555	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
C556	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C557	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C558	1-162-638-11	CERAMIC CHIP 1uF 16V	
C562	1-162-638-11	CERAMIC CHIP 1uF 16V	
C563	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C566	1-162-638-11	CERAMIC CHIP 1uF 16V	
C569	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
		(CONNECTOR)	
CN551	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN552	1-580-056-21	PIN, CONNECTOR 3P	
		(DIODE)	
D552	8-719-404-46	DIODE MA110	
		(IC)	
IC551	8-759-822-37	IC LA7293M	
		(JACK)	
J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
		(TRANSISTOR)	
Q551	8-729-402-55	TRANSISTOR 2SB1218A	

(RESISTOR)

Ref. No.	Part No.	Description				Remark
R551	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R552	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R553	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R554	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R555	1-216-864-11	METAL CHIP	0	5%	1/16W	
R556	1-216-864-11	METAL CHIP	0	5%	1/16W	
R558	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R564	1-216-295-00	METAL CHIP	0	5%	1/10W	
R565	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R566	1-216-864-11	METAL CHIP	0	5%	1/16W	
R571	1-216-296-00	METAL CHIP	0	5%	1/8W	
R572	1-216-296-00	METAL CHIP	0	5%	1/8W	

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A-7071-656-A MF-191 BOARD COMPLETE
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(DIODE)

Ref. No.	Part No.	Description	Remark
D971	8-719-404-46	DIODE MA110	

(RESISTOR)

Ref. No.	Part No.	Description				Remark
R971	1-216-295-00	METAL CHIP	0	5%	1/10W	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S971	1-692-088-41	SWITHC, TACTILE (FOCUS)	
S972	1-241-865-11	RES, VAR, CARBON 10K (LENS OPEN/CLOSE)	
S973	1-572-467-11	SWITCH, PUSH (1 KEY) (FOCUS LING)	

(FLAT CABLE)

Ref. No.	Part No.	Description	Remark
W971	1-696-484-11	CABLE, FLAT (FFC-87)	

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* A-7063-263-A SL-27 BOARD, COMPLETE
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(CAPACITOR)

Ref. No.	Part No.	Description				Remark
C521	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C522	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C524	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C525	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C526	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C527	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN521	1-691-482-21	CONNECTOR, FFC/FPC 15P	
CN522	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN523	1-691-473-21	CONNECTOR, FFC/FPC 7P	

(IC)

Ref. No.	Part No.	Description	Remark
IC521	8-759-059-09	LB8111V	

(TRANSISTOR)

Ref. No.	Part No.	Description	Remark
Q521	8-729-402-81	TRANSISTOR XN4501	

(RESISTOR)

Ref. No.	Part No.	Description				Remark
R522	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R523	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R524	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R525	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R528	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R530	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R532	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R533	1-216-864-11	METAL CHIP	0	5%	1/16W	

(CONPOSITION CIRCUIT BLOCK)

Ref. No.	Part No.	Description	Remark
RB521	1-236-424-11	NETWORK, RES 10K	
RB522	1-236-424-11	NETWORK, RES 10K	

(FLAT CABLE)

Ref. No.	Part No.	Description	Remark
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	

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* A-7071-651-A SW-205 BOARD, COMPLETE
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(SWITCH)

Ref. No.	Part No.	Description	Remark
S519	1-553-977-00	SWITCH, SLIDE (STBT)	
S520	1-571-315-11	SWITCH, KEY BOARD (START/STO)	

(FLAT CABLE)

Ref. No.	Part No.	Description	Remark
W519	1-696-488-11	CABLE, FLAT (FFC-92)	

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* A-7063-261-A VC-122 BOARD, COMPLETE
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(CAPACITOR)

Ref. No.	Part No.	Description				Remark
C701	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C702	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C703	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C705	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C707	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C708	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C710	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C711	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V	

VC-122

Ref. No.	Part No.	Description	Remark
C713	1-162-947-11	CERAMIC CHIP 33PF 5%	50V
C714	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C716	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C718	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C719	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C721	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C722	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C723	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C724	1-164-634-11	CERAMIC CHIP 1uF	16V
C725	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C726	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C727	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C728	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C729	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C730	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C731	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C734	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C735	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C736	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C737	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C738	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C739	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C741	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C742	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C745	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C749	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C750	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C751	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C752	1-162-946-11	CERAMIC CHIP 27PF 5%	50V
C801	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C802	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C803	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C804	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C805	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C806	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C807	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C808	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C809	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C810	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C811	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C813	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C814	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C815	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C816	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C817	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C818	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C819	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C820	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C821	1-162-947-11	CERAMIC CHIP 33PF 5%	50V
C823	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C824	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C826	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C827	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C830	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C832	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C833	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C834	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C835	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C836	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C837	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C838	1-135-145-11	TANTALUM CHIP 0.47uF 10%	35V
C839	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C841	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C851	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C852	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C853	1-164-634-11	CERAMIC CHIP 1uF	16V
C854	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C855	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C856	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C857	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C858	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C859	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C860	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C861	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C862	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C863	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C864	1-162-638-11	CERAMIC CHIP 1uF	16V
C866	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C868	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C869	1-164-173-11	CERAMIC CHIP 0.0039uF 10%	50V
C870	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C871	1-164-634-11	CERAMIC CHIP 1uF	16V
		(CONNECTOR)	
CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P	
CN801	1-573-336-11	CONNECTOR, BOARD TO BOARD 16P	
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P	
		(TRIMMER)	
CT801	1-141-356-11	CAP, ADJ	
CT801	1-141-430-51	CAP, CHIP TRIMMER	
		(FILTER)	
FL701	1-236-834-21	FILTER, LOW PASS	
FL702	1-415-751-21	DELAY LINE, LC (YH)	
		(IC)	
IC702	8-759-064-36	IC MB88346BPFV-EF	
IC703	8-759-710-07	IC NJM2234M	

Ref. No.	Part No.	Description	Remark
IC704	8-752-348-92	IC CXD2101AR	
IC705	8-759-063-18	IC CXD2103AR	
IC706	8-752-355-56	IC CXD2104BN	
IC707	8-752-344-53	IC CXD2100Q	
IC709	8-752-839-80	IC CXP80624-424R	
IC712	8-759-073-67	IC BR9021AF	
IC801	8-752-350-16	IC CXD1257AR	
IC802	8-752-056-39	IC CXA1507BR	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	
IC851	8-759-701-24	IC NJM3414M-TE1	
IC852	8-759-998-96	IC LM324D	
IC853	8-759-058-47	IC MPC1724VMEL	
IC854	8-759-823-51	IC LB1830M	
IC856	8-759-998-98	IC LM358D	

〈 COIL 〉

Ref. No.	Part No.	Description	Remark
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L703	1-412-052-21	INDUCTOR CHIP 1uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L705	1-412-979-21	INDUCTOR 1uH	
L706	1-412-062-11	INDUCTOR CHIP 47uH	
L708	1-412-979-21	INDUCTOR 1uH	
L710	1-412-052-21	INDUCTOR CHIP 1uH	
L711	1-412-058-11	INDUCTOR CHIP 10uH	
L712	1-412-052-21	INDUCTOR CHIP 1uH	
L714	1-412-006-31	INDUCTOR CHIP 10uH	
L715	1-412-058-11	INDUCTOR CHIP 10uH	
L717	1-412-058-11	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	
L721	1-410-391-11	INDUCTOR CHIP 68uH	
L801	1-412-029-11	INDUCTOR CHIP 10uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-058-11	INDUCTOR CHIP 10uH	
L804	1-412-058-11	INDUCTOR CHIP 10uH	
L851	1-412-058-11	INDUCTOR CHIP 10uH	
L853	1-412-031-11	INDUCTOR CHIP 47uH	

〈 TRANSISTOR 〉

Ref. No.	Part No.	Description	Remark
Q701	8-729-928-87	TRANSISTOR DTC124EE	
Q702	8-729-427-74	TRANSISTOR XP4601	
Q703	8-729-427-74	TRANSISTOR XP4601	
Q704	8-729-425-50	TRANSISTOR 2SB1462Q	
Q706	8-729-425-64	TRANSISTOR 2SD2216Q	
Q707	8-729-428-84	TRANSISTOR UN9111	
Q708	8-729-425-64	TRANSISTOR 2SD2216Q	
Q709	8-729-427-72	TRANSISTOR XP4501	
Q801	8-729-425-64	TRANSISTOR 2SD2216Q	
Q802	8-729-427-70	TRANSISTOR XP4401	
Q851	8-729-425-64	TRANSISTOR 2SD2216Q	
Q852	8-729-013-88	TRANSISTOR RN1302	
Q853	8-729-427-70	TRANSISTOR XP4401	

〈 RESISTOR 〉

Ref. No.	Part No.	Description	Remark
R701	1-216-864-11	METAL CHIP 0 5% 1/16W	
R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-216-815-11	METAL CHIP 330 5% 1/16W	
R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R709	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R720	1-216-864-11	METAL CHIP 0 5% 1/16W	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R724	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R727	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R728	1-216-813-11	METAL CHIP 220 5% 1/16W	
R729	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R730	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R731	1-216-295-00	METAL CHIP 0 5% 1/10W	
R732	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R733	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R734	1-216-817-11	METAL CHIP 470 5% 1/16W	
R735	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R736	1-216-864-11	METAL CHIP 0 5% 1/16W	
R738	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R739	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R742	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R744	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R745	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R747	1-216-864-11	METAL CHIP 0 5% 1/16W	
R749	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R750	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R751	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R752	1-216-817-11	METAL CHIP 470 5% 1/16W	
R753	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R754	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R755	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R756	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R757	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R758	1-216-841-11	METAL CHIP 47K 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R759	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R760	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R761	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R762	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R769	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R772	1-216-864-11	METAL CHIP	0	5%	1/16W	
R773	1-216-864-11	METAL CHIP	0	5%	1/16W	
R775	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R776	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R777	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R778	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R779	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R780	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R781	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R782	1-216-813-11	METAL CHIP	220	5%	1/16W	
R784	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R785	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R788	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R791	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R792	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R792	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R793	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R794	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R795	1-216-815-11	METAL CHIP	330	5%	1/16W	
R796	1-216-817-11	METAL CHIP	470	5%	1/16W	
R797	1-216-818-11	METAL CHIP	560	5%	1/16W	
R802	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R803	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R804	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R806	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R807	1-216-817-11	METAL CHIP	470	5%	1/16W	
R808	1-216-801-11	METAL CHIP	22	5%	1/16W	
R809	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R813	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R816	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R819	1-216-805-11	METAL CHIP	47	5%	1/16W	
R821	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R823	1-218-721-11	METAL CHIP	16K	0.50%	1/16W	
R825	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R826	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R827	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R828	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R829	1-218-744-11	METAL CHIP	150K	0.50%	1/16W	
R830	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R851	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R852	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R853	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R855	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R856	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R857	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R860	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R861	1-218-724-11	METAL CHIP	22K	0.50%	1/16W	
R862	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R863	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R864	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R865	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R866	1-216-820-11	METAL CHIP	820	5%	1/16W	
R867	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R868	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R869	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R871	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R872	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R873	1-216-814-11	METAL CHIP	270	5%	1/16W	
R874	1-216-842-11	METAL CHIP	56K	5%	1/16W	

〈 COMPOSITION CIRCUIT BLOCK 〉

RB701	1-236-420-11	NETWORK, RES 4.7K
RB702	1-236-432-11	NETWORK, RES 47K
RB703	1-236-412-11	NETWORK, RES 1.0K
RB704	1-236-416-11	NETWORK, RES 2.2K
RB705	1-236-416-11	NETWORK, RES 2.2K
RB706	1-236-412-11	NETWORK, RES 1.0K
RB707	1-236-412-11	NETWORK, RES 1.0K
RB708	1-236-412-11	NETWORK, RES 1.0K

〈 VIBRATOR 〉

X701	1-579-553-11	VIBRATOR
X801	1-579-619-11	VIBRATOR, CRYSTAL

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* A-7063-183-A VF-42 BOARD, COMPLETE

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⚠	1-540-019-21	SOCKET ASSY, CRT
	3-942-888-01	HOLDER, LED

〈 CAPACITOR 〉

C501	1-126-176-11	ELECT	220uF	20%	10V
C502	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
⚠C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
⚠C505	1-164-713-11	CERAMIC CHIP	0.0056uF	5%	50V	
⚠C506	1-164-713-11	CERAMIC CHIP	0.0056uF	5%	50V	
C507	1-127-515-11	ELECT(SOLID)	47uF	20%	6.3V	
C508	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V	
C509	1-124-257-00	ELECT	2.2uF	20%	50V	
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C511	1-126-090-11	ELECT	82uF	20%	10V	
C512	1-137-306-11	FILM CHIP	0.1uF	5%	16V	
C513	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C514	1-131-381-00	TANTALUM	47uF	10%	10V	
C515	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C516	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	

(DIODE)

Ref. No.	Part No.	Description		Remark
D501	8-719-820-65	DIODE	TLS221	
D502	8-719-984-02	LED	BR4371F	
D503	8-719-400-20	DIODE	MA152WA	

(IC)

Ref. No.	Part No.	Description		Remark
IC501	8-759-420-01	IC	AN2512S	

(COIL)

Ref. No.	Part No.	Description		Remark
L501	1-408-976-21	INDUCTOR	33uH	
L502	1-408-785-21	INDUCTOR CHIP	47uH	
⚠L503	1-459-876-41	COIL, FERRITE (HLC)		

(TRANSISTOR)

Ref. No.	Part No.	Description		Remark
Q501	8-729-100-66	TRANSISTOR	2SC1623	
Q502	8-729-216-31	TRANSISTOR	2SA1163-G	
⚠Q503	8-729-100-66	TRANSISTOR	2SC1623	
Q504	8-729-106-68	TRANSISTOR	2SD1615A-GP	

(RESISTOR)

Ref. No.	Part No.	Description				Remark
R501	1-216-033-00	METAL CHIP	220	5%	1/10W	
R502	1-216-041-00	METAL CHIP	470	5%	1/10W	
R503	1-216-041-00	METAL CHIP	470	5%	1/10W	
⚠R504	1-216-324-11	METAL GLAZE	10K	1%	1/10W	
⚠R505	1-218-150-11	METAL GLAZE	1.2K	1%	1/10W	
R506	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R507	1-216-047-00	METAL CHIP	820	5%	1/10W	
R508	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R509	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R510	1-216-005-00	METAL CHIP	15	5%	1/10W	
R511	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R512	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R513	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R514	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R515	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R516	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R517	1-216-025-00	METAL CHIP	100	5%	1/10W	
R518	1-216-308-00	METAL CHIP	4.7	5%	1/10W	
R519	1-216-336-11	METAL CHIP	47K	1%	1/10W	
R520	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R521	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R522	1-216-160-00	METAL GLAZE	27	5%	1/8W	
R523	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R524	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R525	1-216-097-00	METAL CHIP	100K	5%	1/10W	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description		Remark
RV501	1-241-596-11	RES, ADJ, METAL GRAZE	47K	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE	470	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE	2.2K	
RV504	1-228-762-00	RES, ADJ, METAL GLAZE	1M	

(TRANSFORMER)

Ref. No.	Part No.	Description	Remark
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	

(THERMISTOR)

Ref. No.	Part No.	Description	Remark
TH501	1-809-350-21	THERMISTOR, NTC (2125)	

(FLAT CABLE)

Ref. No.	Part No.	Description	Remark
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

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A-7071-653-A VK-27 BOARD COMPLETE
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(DIODE)

Ref. No.	Part No.	Description		Remark
D976	8-719-404-46	DIODE	MA110	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S976	1-572-921-31	SWITCH, KEY BOARD (STOP)	
S977	1-692-260-11	SWITCH, SLIDE (POWER)	
S978	1-692-247-11	SWITCH, TACTIL (2 CLICK)(EDIT SERCH (-))	
S979	1-572-921-31	SWITCH, KEY BOARD (REW)	
S980	1-572-921-31	SWITCH, KEY BOARD (PB)	
S981	1-692-247-11	SWITCH, TACTIL (2 CLICK)(EDIT SERCH (+))	
S983	1-572-921-31	SWITCH, KEY BOARD (FF)	
S984	1-572-921-31	SWITCH, KEY BOARD (PAUSE)	

(FLAT CABLE)

Ref. No.	Part No.	Description	Remark
W987	1-696-622-11	PA BOARD, PF-591 FLEXIBLE	

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VS-95

Ref. No.	Part No.	Description	Remark
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*	A-7063-260-A	VS-95 BOARD, COMPLETE	
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	1-691-471-11	CONNECTOR, TRANSLATION 11P	
		(CAPACITOR)	
C001	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C002	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C003	1-162-955-11	CERAMIC CHIP 150PF 5% 50V	
C004	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C005	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C006	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C009	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C010	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C011	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C012	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C013	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C014	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C018	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C019	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C020	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C021	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C022	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C023	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C024	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C025	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C026	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C027	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C028	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C029	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C030	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C035	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C049	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C057	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C058	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C059	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C061	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C063	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C064	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C065	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C066	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C067	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C068	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C069	1-162-948-11	CERAMIC CHIP 39PF 5% 50V	
C072	1-162-943-11	CERAMIC CHIP 15PF 5% 50V	
C073	1-162-952-11	CERAMIC CHIP 82PF 5% 50V	
C074	1-162-956-11	CERAMIC CHIP 180PF 5% 50V	
C075	1-162-942-11	CERAMIC CHIP 12PF 5% 50V	
C076	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C077	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C080	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C081	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C082	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C083	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C085	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	
C091	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C150	1-162-946-11	CERAMIC CHIP 27PF 5% 50V	
C151	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C156	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C159	1-162-950-11	CERAMIC CHIP 56PF 5% 50V	
C161	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C167	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C170	1-162-568-11	CERAMIC CHIP 0.33uF 25V	
C171	1-162-638-11	CERAMIC CHIP 1uF 16V	
C173	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C175	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C176	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C177	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C178	1-164-145-11	CERAMIC CHIP 390PF 5% 50V	
C179	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C180	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	
C181	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C182	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C187	1-162-948-11	CERAMIC CHIP 39PF 5% 50V	
C192	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C194	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C199	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C205	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C206	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C207	1-162-952-11	CERAMIC CHIP 82PF 5% 50V	
C208	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C209	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C213	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C214	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C216	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C217	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C218	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C219	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C220	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C221	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C222	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C223	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C225	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C226	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C227	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C228	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C229	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C230	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C231	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C232	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	

Ref. No.	Part No.	Description				Remark
C233	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C236	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C239	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C241	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C242	1-162-960-11	CERAMIC CHIP	220PF	10%	50V	
C246	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C247	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C250	1-164-145-11	CERAMIC CHIP	390PF	5%	50V	
C254	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C255	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C257	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	
C259	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C260	1-162-945-11	CERAMIC CHIP	22PF	5%	50V	
C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C262	1-162-954-11	CERAMIC CHIP	120PF	5%	50V	
C263	1-162-951-11	CERAMIC CHIP	68PF	5%	50V	
C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V	
C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C266	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C268	1-162-955-11	CERAMIC CHIP	150PF	5%	50V	
C271	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C274	1-162-952-11	CERAMIC CHIP	82PF	5%	50V	
C275	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C278	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C279	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C280	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V	
C282	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C283	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C284	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C288	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C291	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C294	1-162-638-11	CERAMIC CHIP	1uF		16V	
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C299	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C300	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C303	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C306	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C307	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C308	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C401	1-164-346-11	CERAMIC CHIP	1uF		16V	
C402	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C404	1-164-346-11	CERAMIC CHIP	1uF		16V	
C406	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C407	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C408	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C409	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C411	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	
C412	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C414	1-164-160-11	CERAMIC CHIP	20PF	5%	50V	
C415	1-165-128-11	CERAMIC CHIP	0.22uF		16V	
C416	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C418	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C420	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C421	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C423	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C424	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C425	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C426	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C427	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C428	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C429	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C430	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C431	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	
C432	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
C433	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C434	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C435	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C436	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C437	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C438	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C439	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V	
C440	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C441	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C442	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C444	1-162-995-11	CERAMIC CHIP	0.022uF		50V	

Ref. No.	Part No.	Description	Remark
C445	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C446	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C447	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C449	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C450	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C451	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C452	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C453	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C454	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C455	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C456	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C457	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C458	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C459	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C460	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C461	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C462	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C463	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C464	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C465	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C466	1-164-298-11	CERAMIC CHIP 0.15uF 10% 25V	
C467	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C468	1-164-298-11	CERAMIC CHIP 0.15uF 10% 25V	
C469	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C470	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C471	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C472	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C473	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C474	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C475	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C476	1-135-179-21	TANTAL. CHIP 2.2uF 20% 16V	
C477	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C481	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C482	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C483	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C484	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C485	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C486	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C487	1-128-530-11	ELECT CHIP 33uF 20% 10V	

(FILTER)

Ref. No.	Part No.	Description	Remark
CF151	1-579-370-11	FILTER, CERAMIC	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN002	1-569-775-21	PIN, CONNECTOR 5P	
CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P	
CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P	
CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P	
* CN407	1-580-055-21	PIN, CONNECTOR 2P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D001	8-719-800-76	DIODE 1SS123	
D152	8-719-027-48	DIODE MA142WA	
D159	8-719-027-50	DIODE MA142WK	
D160	8-719-027-50	DIODE MA142WK	
D163	8-719-027-50	DIODE MA142WK	
D401	8-719-421-27	DIODE MA728	
D402	8-719-027-50	DIODE MA142WK-(TX)	
D403	8-719-404-46	DIODE MA110	

(FILTER)

Ref. No.	Part No.	Description	Remark
FL152	1-236-575-11	B.P.F (PAL-M)	
FL153	1-236-146-11	FILTER, BAND PASS	
FL155	1-236-757-21	FILTER, LOW PASS (C)	
FL401	1-406-452-11	COIL, OSC	

(IC)

Ref. No.	Part No.	Description	Remark
IC001	8-752-033-38	IC CXA1202R	
IC003	8-752-053-21	IC CXA1211M	
IC151	8-752-065-54	IC CXA1207AR	
IC152	8-752-065-56	IC CXA1208R	
IC154	8-752-332-68	IC CXL5502M	
IC155	8-752-053-21	IC CXA1211M	
IC156	8-759-055-82	IC M62353GP	
IC158	8-759-055-82	IC M62353GP	
IC159	8-759-636-33	IC CXA1452N	
IC401	8-759-056-84	IC S-8420AF	
IC402	8-752-836-29	IC CXP80624-416R	
IC403	8-759-073-94	IC uPD75316GF-295-3B9	
IC404	8-759-059-42	IC CXA1481AR	
IC405	8-759-044-78	IC BR9011BF-RE2	
IC406	8-759-081-96	IC uPD6456GS-620	
IC407	8-759-145-63	IC uPD7564G-540	
IC408	8-759-057-60	IC MCD004BM	
IC409	8-759-999-02	IC TL1596CDB	
IC410	8-759-062-02	IC MPC1720VM	

(COIL)

Ref. No.	Part No.	Description	Remark
L001	1-410-381-11	INDUCTOR CHIP 10uH	
L002	1-412-066-21	INDUCTOR CHIP 220uH	
L003	1-412-066-21	INDUCTOR CHIP 220uH	
L005	1-412-060-11	INDUCTOR CHIP 22uH	
L007	1-412-058-11	INDUCTOR CHIP 10uH	
L009	1-410-380-31	INDUCTOR CHIP 8.2uH	
L010	1-410-655-31	INDUCTOR CHIP 120uH	
L011	1-412-280-31	INDUCTOR 330uH	
L012	1-410-387-11	INDUCTOR CHIP 33uH	

Ref. No.	Part No.	Description	Remark
L013	1-410-657-21	INDUCTOR CHIP 180uH	
L015	1-410-381-11	INDUCTOR CHIP 10uH	
L150	1-410-389-31	INDUCTOR CHIP 47uH	
L152	1-410-385-11	INDUCTOR CHIP 22uH	
L154	1-410-390-11	INDUCTOR CHIP 56uH	
L155	1-410-390-11	INDUCTOR CHIP 56uH	
L160	1-412-058-11	INDUCTOR CHIP 10uH	
L161	1-410-385-11	INDUCTOR CHIP 22uH	
L162	1-412-280-31	INDUCTOR 330uH	
L163	1-410-167-41	INDUCTOR CHIP 820uH	
L164	1-410-657-21	INDUCTOR CHIP 180uH	
L169	1-410-389-31	INDUCTOR CHIP 47uH	
L171	1-410-390-11	INDUCTOR CHIP 56uH	
L175	1-410-393-11	INDUCTOR CHIP 100uH	
L176	1-410-656-11	INDUCTOR CHIP 150uH	
L177	1-412-058-11	INDUCTOR CHIP 10uH	
L178	1-412-062-11	INDUCTOR CHIP 47uH	
L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
L180	1-410-393-11	INDUCTOR CHIP 100uH	
L181	1-410-393-11	INDUCTOR CHIP 100uH	
L182	1-410-655-31	INDUCTOR CHIP 120uH	
L183	1-410-385-11	INDUCTOR CHIP 22uH	
L185	1-412-058-11	INDUCTOR CHIP 10uH	
L186	1-410-192-51	INDUCTOR CHIP 1uH	
L401	1-412-056-11	INDUCTOR CHIP 4.7uH	
L402	1-412-058-11	INDUCTOR CHIP 10uH	
L403	1-412-062-11	INDUCTOR CHIP 47uH	
L404	1-412-058-11	INDUCTOR CHIP 10uH	
L405	1-412-058-11	INDUCTOR CHIP 10uH	
L406	1-412-058-11	INDUCTOR CHIP 10uH	
L407	1-412-052-21	INDUCTOR CHIP 1uH	

(IC LINK)

Ref. No.	Part No.	Description	Remark
⚠PS401	1-576-122-21	RINK, IC	
⚠PS402	1-576-123-21	RINK, IC	

(TRANSISTOR)

Ref. No.	Part No.	Description	Remark
Q001	8-729-216-22	TRANSISTOR 2SA812	
Q002	8-729-014-16	TRANSISTOR RN2302	
Q003	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q010	8-729-403-35	TRANSISTOR UN5113	
Q019	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q020	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q021	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q024	8-729-102-07	TRANSISTOR 2SC2223	
Q025	8-729-014-16	TRANSISTOR RN2302	
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q029	8-729-403-35	TRANSISTOR UN5113	
Q151	8-729-101-07	TRANSISTOR 2SB798	
Q152	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q154	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q158	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q161	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q162	8-729-403-35	TRANSISTOR UN5113	
Q166	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q168	8-729-403-35	TRANSISTOR UN5113	
Q170	8-729-420-20	TRANSISTOR XN4312	
Q171	8-729-117-73	TRANSISTOR 2SC4178	
Q172	8-729-117-73	TRANSISTOR 2SC4178	
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q177	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q178	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q180	8-729-422-54	TRANSISTOR XN4215	
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q183	8-729-420-53	TRANSISTOR UN5115	
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q195	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q196	8-729-403-35	TRANSISTOR UN5113	
Q199	8-729-807-87	TRANSISTOR 2SB1295	
Q200	8-729-013-88	TRANSISTOR RN1302	
Q203	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q205	8-729-402-42	TRANSISTOR UN5213	
Q207	8-729-403-35	TRANSISTOR UN5113	
Q208	8-729-013-88	TRANSISTOR RN1302	
Q210	8-729-402-42	TRANSISTOR UN5213	
Q212	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q217	8-729-402-42	TRANSISTOR UN5213	
Q221	8-729-420-12	TRANSISTOR XN4213	
Q231	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q232	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q233	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q234	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q236	8-729-420-56	TRANSISTOR UN511E	
Q237	8-729-425-50	TRANSISTOR 2SB1462Q	
Q401	8-729-402-48	TRANSISTOR UN521E	
Q403	8-729-403-35	TRANSISTOR UN5113	
Q405	8-729-013-88	TRANSISTOR RN1302	
Q409	8-729-017-67	TRANSISTOR 2SB1574	

(RESISTOR)

Ref. No.	Part No.	Description	Remark
R001	1-216-806-11	METAL GLAZE 56 5% 1/16W	
R002	1-216-818-11	METAL CHIP 560 5% 1/16W	
R003	1-216-803-11	METAL CHIP 33 5% 1/16W	
R004	1-216-814-11	METAL CHIP 270 5% 1/16W	
R005	1-216-813-11	METAL CHIP 220 5% 1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
R006	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R007	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R012	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R013	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R016	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R017	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R020	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R021	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R022	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R023	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R024	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R025	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R026	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R027	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R028	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R029	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R030	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R033	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R049	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R050	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R051	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R052	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R054	1-216-817-11	METAL CHIP	470	5%	1/16W	
R055	1-216-820-11	METAL CHIP	820	5%	1/16W	
R056	1-216-864-11	METAL CHIP	0	5%	1/16W	
R057	1-216-818-11	METAL CHIP	560	5%	1/16W	
R058	1-216-818-11	METAL CHIP	560	5%	1/16W	
R060	1-216-864-11	METAL CHIP	0	5%	1/16W	
R061	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R064	1-216-817-11	METAL CHIP	470	5%	1/16W	
R066	1-216-809-11	METAL CHIP	100	5%	1/16W	
R067	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R070	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R071	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R072	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R076	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R078	1-216-820-11	METAL CHIP	820	5%	1/16W	
R079	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R081	1-216-864-11	METAL CHIP	0	5%	1/16W	
R082	1-216-864-11	METAL CHIP	0	5%	1/16W	
R083	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R085	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R086	1-216-817-11	METAL CHIP	470	5%	1/16W	
R087	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R088	1-216-808-11	METAL CHIP	82	5%	1/16W	
R090	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R097	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R112	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R113	1-216-295-00	METAL CHIP	0	5%	1/10W	
R114	1-216-864-11	METAL CHIP	0	5%	1/16W	
R131	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R132	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R142	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R151	1-216-296-00	METAL CHIP	0	5%	1/8W	
R152	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R153	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R154	1-216-820-11	METAL CHIP	820	5%	1/16W	
R155	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R156	1-216-296-00	METAL CHIP	0	5%	1/8W	
R158	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R160	1-216-819-11	METAL CHIP	680	5%	1/16W	
R161	1-216-809-11	METAL CHIP	100	5%	1/16W	
R164	1-216-809-11	METAL CHIP	100	5%	1/16W	
R167	1-216-820-11	METAL CHIP	820	5%	1/16W	
R168	1-216-820-11	METAL CHIP	820	5%	1/16W	
R170	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R175	1-216-813-11	METAL CHIP	220	5%	1/16W	
R177	1-216-818-11	METAL CHIP	560	5%	1/16W	
R178	1-216-817-11	METAL CHIP	470	5%	1/16W	
R179	1-216-820-11	METAL CHIP	820	5%	1/16W	
R189	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R190	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R192	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R193	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R194	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R196	1-216-815-11	METAL CHIP	330	5%	1/16W	
R198	1-216-817-11	METAL CHIP	470	5%	1/16W	
R200	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R201	1-216-815-11	METAL CHIP	330	5%	1/16W	
R202	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R203	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R204	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R205	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R206	1-216-813-11	METAL CHIP	220	5%	1/16W	
R208	1-216-864-11	METAL CHIP	0	5%	1/16W	
R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R213	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R216	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R217	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R218	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R219	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R220	1-216-811-11	METAL CHIP	150	5%	1/16W	
R221	1-216-864-11	METAL CHIP	0	5%	1/16W	
R222	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R223	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R224	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R226	1-216-818-11	METAL CHIP	560	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R228	1-216-812-11	METAL CHIP 180 5% 1/16W	
R230	1-216-807-11	METAL CHIP 68 5% 1/16W	
R231	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R232	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R242	1-216-818-11	METAL CHIP 560 5% 1/16W	
R243	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R253	1-216-820-11	METAL CHIP 820 5% 1/16W	
R254	1-216-820-11	METAL CHIP 820 5% 1/16W	
R255	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R256	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R257	1-216-809-11	METAL CHIP 100 5% 1/16W	
R258	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R259	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R260	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R263	1-216-864-11	METAL CHIP 0 5% 1/16W	
R266	1-216-864-11	METAL CHIP 0 5% 1/16W	
R267	1-216-864-11	METAL CHIP 0 5% 1/16W	
R270	1-216-864-11	METAL CHIP 0 5% 1/16W	
R271	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R272	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R276	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R277	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R278	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R279	1-216-818-11	METAL CHIP 560 5% 1/16W	
R280	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R281	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R282	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R283	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R285	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R286	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R290	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R291	1-216-820-11	METAL CHIP 820 5% 1/16W	
R293	1-216-807-11	METAL CHIP 68 5% 1/16W	
R294	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R295	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R297	1-216-820-11	METAL CHIP 820 5% 1/16W	
R298	1-216-820-11	METAL CHIP 820 5% 1/16W	
R299	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R300	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R301	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R304	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R306	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R307	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R309	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R310	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R312	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R314	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R315	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R316	1-216-817-11	METAL CHIP 470 5% 1/16W	
R320	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R321	1-216-819-11	METAL CHIP 680 5% 1/16W	
R323	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R324	1-216-817-11	METAL CHIP 470 5% 1/16W	
R329	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R331	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R333	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R334	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R335	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R338	1-216-864-11	METAL CHIP 0 5% 1/16W	
R339	1-216-864-11	METAL CHIP 0 5% 1/16W	
R346	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R347	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R352	1-216-864-11	METAL CHIP 0 5% 1/16W	
R353	1-216-864-11	METAL CHIP 0 5% 1/16W	
R357	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R358	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R359	1-216-296-00	METAL CHIP 0 5% 1/8W	
R360	1-216-296-00	METAL CHIP 0 5% 1/8W	
R362	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R363	1-216-864-11	METAL CHIP 0 5% 1/16W	
R366	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R369	1-216-864-11	METAL CHIP 0 5% 1/16W	
R370	1-216-864-11	METAL CHIP 0 5% 1/16W	
R371	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R376	1-216-817-11	METAL CHIP 470 5% 1/16W	
R377	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R378	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R379	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R381	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R386	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R387	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R388	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R389	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R390	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R391	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R392	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R393	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R394	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R395	1-216-864-11	METAL CHIP 0 5% 1/16W	
R396	1-216-864-11	METAL CHIP 0 5% 1/16W	
R397	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R398	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R401	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R403	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R404	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R405	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R407	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R408	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R409	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R410	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R411	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R412	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R413	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R418	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R419	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R420	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R421	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R422	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R424	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R426	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R428	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R429	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R430	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R431	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R433	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R436	1-216-864-11	METAL CHIP	0	5%	1/16W	
R437	1-216-817-11	METAL CHIP	470	5%	1/16W	
R438	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R439	1-216-864-11	METAL CHIP	0	5%	1/16W	
R441	1-216-864-11	METAL CHIP	0	5%	1/16W	
R442	1-216-864-11	METAL CHIP	0	5%	1/16W	
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R447	1-216-864-11	METAL CHIP	0	5%	1/16W	
R448	1-216-809-11	METAL CHIP	100	5%	1/16W	
R449	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R451	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R452	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R453	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R454	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R457	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R460	1-216-864-11	METAL CHIP	0	5%	1/16W	
R461	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R462	1-216-809-11	METAL CHIP	100	5%	1/16W	
R463	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R468	1-216-039-00	METAL CHIP	390	5%	1/10W	
R469	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R470	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R471	1-216-838-11	METAL CHIP	27K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R473	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R474	1-217-671-11	METAL CHIP	1	5%	1/10W	
R475	1-217-671-11	METAL CHIP	1	5%	1/10W	
R476	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R479	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R480	1-217-671-11	METAL CHIP	1	5%	1/10W	
R481	1-217-671-11	METAL CHIP	1	5%	1/10W	
R484	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R485	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R487	1-216-864-11	METAL CHIP	0	5%	1/16W	
R489	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R490	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R491	1-216-296-00	METAL CHIP	0	5%	1/8W	
R492	1-216-864-11	METAL CHIP	0	5%	1/16W	
R493	1-216-864-11	METAL CHIP	0	5%	1/16W	

(CONPOSITION CIRCUIT BLOCK)

Ref. No.	Part No.	Description	Remark
RB401	1-236-442-11	NETWORK, RES 330K	
RB402	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB403	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB404	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB405	1-236-436-11	NETWORK, RES 100K	
RB406	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB407	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB408	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB409	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB410	1-236-412-11	NETWORK, RES 1.0K	
RB411	1-236-424-11	NETWORK, RES 10K	
RB414	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB416	1-236-412-11	NETWORK, RES 1.0K	
RB418	1-236-408-11	NETWORK, RES 470	
RB419	1-236-412-11	NETWORK, RES 1.0K	
RB420	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB421	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB422	1-236-424-11	NETWORK, RES 10K	
RB423	1-236-424-11	NETWORK, RES 10K	
RB424	1-236-424-11	NETWORK, RES 10K	
RB425	1-236-424-11	NETWORK, RES 10K	
RB426	1-236-412-11	NETWORK, RES 1.0K	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description	Remark
RV151	1-238-087-11	RES, ADJ, CERMET 1K	

(FLAT CABLE)

Ref. No.	Part No.	Description	Remark
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	

Ref. No.	Part No.	Description	Remark
		(VIBRATOR)	
X151	1-579-365-21	VIBRATOR, CRYSTAL	
X401	1-579-063-21	VIBRATOR, CERAMIC	
X402	1-579-049-21	VIBRATOR, CRYSTAL	
X403	1-579-367-21	VIBRATOR, CRYSTAL	
X404	1-579-551-11	VIBRATOR, CERAMIC	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
14	1-696-487-11	CABLE, FLAT (FFC-90)	
18	A-7091-800-A	MICROPHONE UNIT	
80	1-692-257-11	SWITCH, PUSH (ZOOM)	
106	1-547-558-21	FILTER BLOCK, OPTICAL	
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
IC875	A-7030-368-A	CCD BLOCK ASSY (AUTO)	
M901	A-7040-564-A	DRUM ASSY (DGH-78A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
M904	3-708-494-01	METER ASSY, IG (IRIS)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3KEY)	
S005	1-570-771-21	SWITCH, (C DOWN)	
⚠V901	1-452-565-11	CRT ASSY	

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ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-465-927-71	REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR31)	
	1-465-927-81	REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR303/TR303PK)	
*	1-571-163-22	SWITCH, ANTENNA CHANGE (CABLE) (TR303/TR303PK)	
	3-738-517-01	BELT (S), SHOULDER	
*	3-754-318-01	INSTRUCTION (TR303/TR303PK)	
	3-755-493-21	MANUAL, INSTRUCTION (ENGLISH)(TR31)	
	3-755-493-31	MANUAL, INSTRUCTION (FRENCH) (TR31:Canadian)	
	3-755-774-41	MANUAL, INSTRUCTION (ENGLISH) (TR303/TR303PK)	
	3-755-774-51	MANUAL, INSTRUCTION (FRENCH, GERMAN) (TR303/TR303PK)	
*	3-795-581-21	SAFEGUARD (SONY), IMPORTANT (TR31:US)	
	3-943-154-11	HOLDER (B), REMOTE CONTROL	
*	3-949-004-01	CUSHION, ACC	
*	3-949-005-01	CUSHION (LOWER)	
*	3-949-006-01	INDIVIDUAL CARTON (TR31)	
*	3-949-006-41	INDIVIDUAL CORTON (TR303)	
	3-950-790-01	CASE, CARRYING, SOFT (TR303PK)	
*	3-950-791-01	CUSHION (RIGHT), INNER (TR303PK)	
*	3-950-792-01	CUSHION (LEFT), INNER (TR303PK)	
*	3-950-793-01	CUSHION (UPPER)(TR303PK)	
*	3-950-794-01	CUSHION (LOWER)(TR303PK)	
*	3-950-795-01	INDIVIDUAL CARTON (TR303PK)	
	A-6767-816-A	RFU ADAPTOR (RFU-89NA)(TR303/TR303PK)	
	A-6768-253-A	RFU ADAPTOR (RFU-90UC)(TR31)	
**	AC-V35	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY

****

****
HARDWARE LIST
****

Ref. No.	Part No.	Description	Remark
#1	7-627-853-57	PRECISION SCREW +P2*5	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

SECTION 7
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 196.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)Note 1	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-91 board
J-7	Extension cord (20P, 0.8 mm)	J-6082-196-A	For extension of CN-65 board (Cabinet (R)) (For the video and the camera section adjustment)
			For extension of AU-138 board (During the repair of AU-138 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm)Note 2	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Extension cord (42P, 0.8 mm)	J-6082-195-A	For the extension of DD-48 board (During the repair of the video section)
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm)Note 2	J-6082-138-A	For extension between the lens block (FPC) and VC-122 board (CN851) (During the repair of the camera section)
J-14	Extension board (30P, 0.8 mm)	J-6082-167-A	For the extension of VS-95 board (For the mecha deck check)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-122 board (CN851).

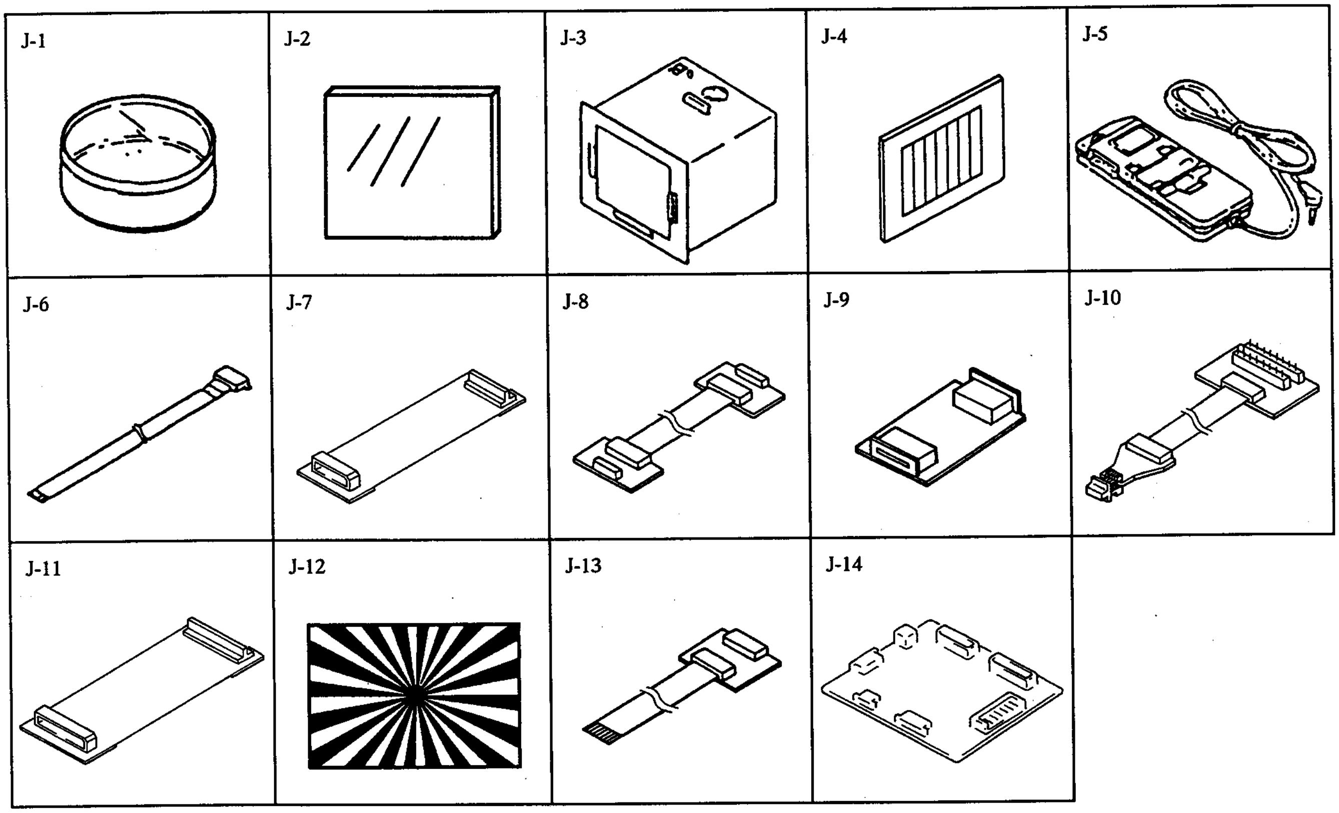

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-95 board CN102.

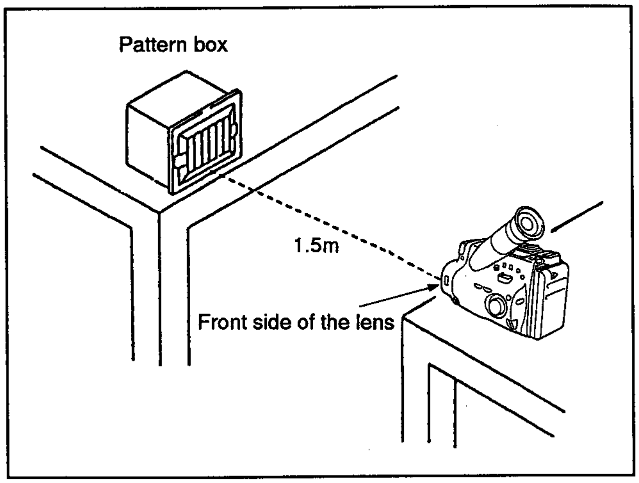
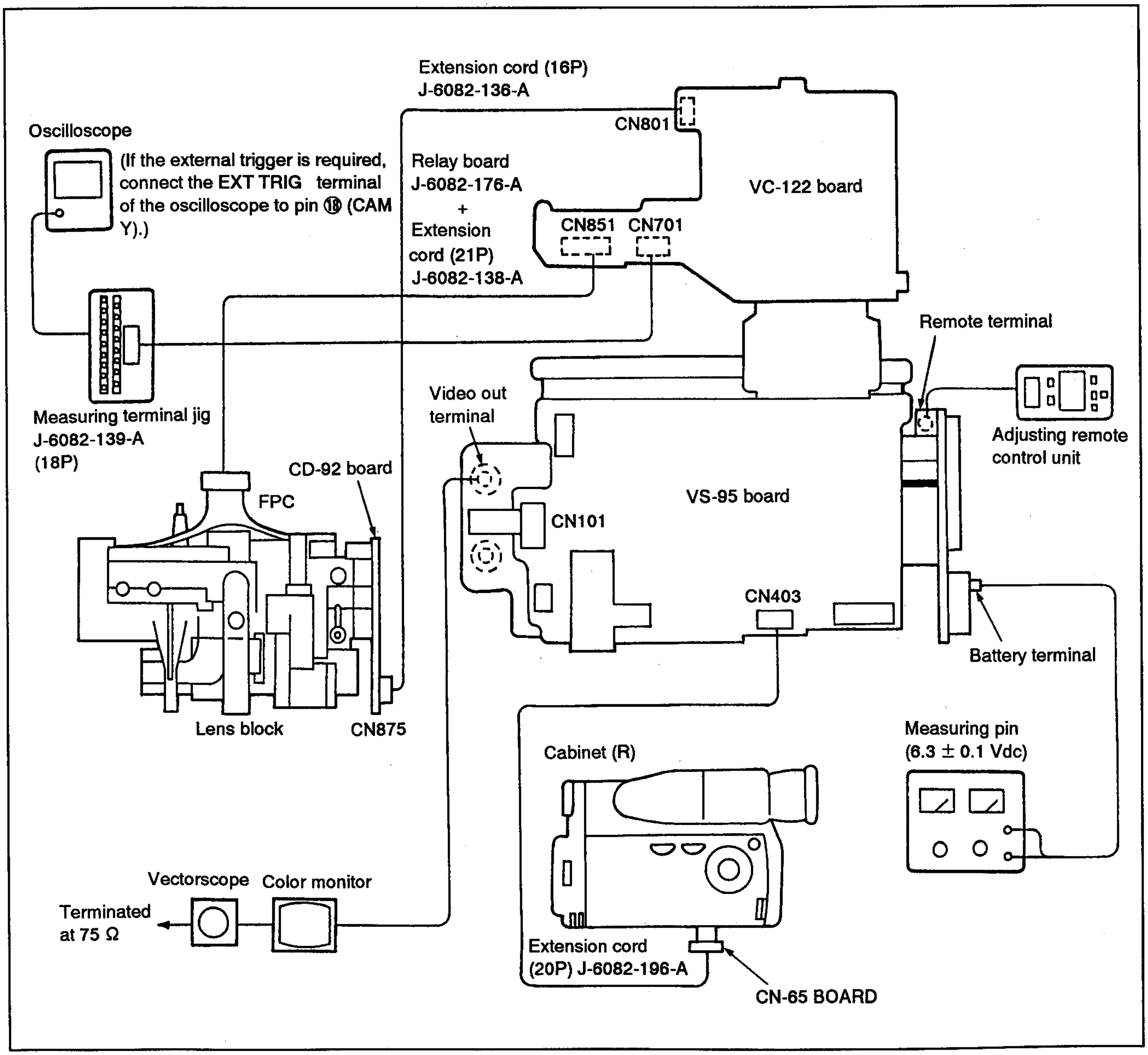

Pattern box
1.5m
Front side of the lens

Fig. 7-2.


Extension cord (16P)
J-6082-136-A
Oscilloscope
CN801
Relay board
J-6082-176-A
+
Extension
cord (21P)
J-6082-138-A
VC-122 board
CN851
CN701
Remote terminal
Measuring terminal jig
J-6082-139-A
(18P)
Video out
terminal
Adjusting remote
control unit
CD-92 board
FPC
VS-95 board
CN101
CN403
Battery terminal
Lens block
CN875
Measuring pin
(6.3 ± 0.1 Vdc)
Cabinet (R)
Vectorscope
Color monitor
Terminated
at 75 Ω
Extension cord
(20P) J-6082-196-A
CN-65 BOARD

(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (VK-27 board S977)····Camera
2. Standby switch (SW-205 board S519)··················Standby
3. LENS OPEN switch (MF-191 board S973) ·············OPEN
4. FOCUS button (MF-191 board S971) ················MANUAL
5. PROGRAM AE selector (CF-32 board S997) ·····NORMAL

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

Color bar chart standard picture frame

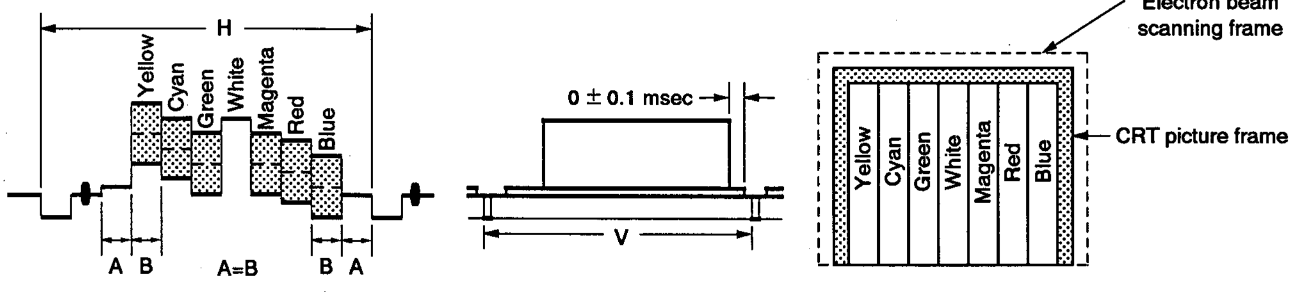

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

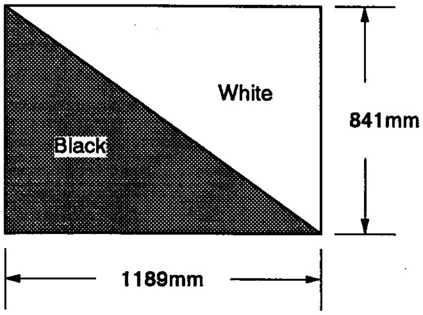

White
Black
841mm
1189mm

Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-122 board IC702). These processes are carried out by the camera micro processor (VC-122 board IC709). This micro processor reads the data written in the non-volatile memory (VC-122 board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (DD-48 board J902).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

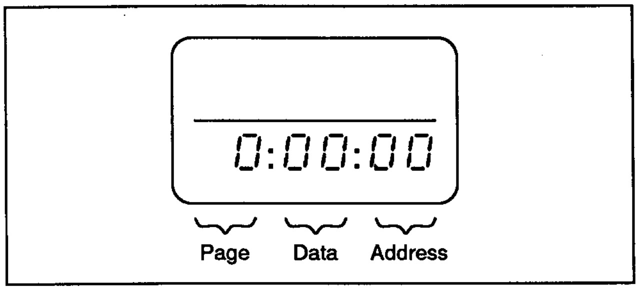


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (▸▸) button is pressed, and decrease when the REW (◂◂) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>ID</td><td>Set ID</td><td>3D</td><td>3D</td></tr>
<tr><td>01</td><td>FADER LEVEL</td><td>AE REF level modification during fader</td><td>E0</td><td>E0</td></tr>
<tr><td>02</td><td>FADER ENDTIM</td><td>The setting of the AE REF modulation time during fader</td><td>10</td><td>10</td></tr>
<tr><td>03</td><td>CS SL</td><td>Carrier balance adjustment</td><td>35</td><td></td></tr>
<tr><td>04</td><td>VSUB</td><td>CCD imager V SUB adjustment [IC702 ③]</td><td>80</td><td></td></tr>
<tr><td>05</td><td>VPGH</td><td>CCD imager VRG adjustment [IC702 ④]</td><td>80</td><td></td></tr>
<tr><td>06</td><td>VREF Y</td><td>Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]</td><td>7B</td><td></td></tr>
<tr><td>07</td><td>VREF C</td><td>Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]</td><td>99</td><td></td></tr>
<tr><td>08</td><td>HALL GAIN</td><td>Hole amplifier gain adjustment [IC702 ⑦] } HALL adjustment</td><td>47</td><td></td></tr>
<tr><td>09</td><td>HALL OFFSET</td><td>Hole amplifier offset adjustment [IC702 ⑧]</td><td>71</td><td></td></tr>
<tr><td>0A</td><td>LOWLIGHT CS</td><td>Low luminance intensity REF level modulation start setting</td><td>C0</td><td>C0</td></tr>
<tr><td>0B</td><td>REF 2V</td><td>2V standard voltage for hole element [IC702 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0C</td><td>AD REF</td><td>Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]</td><td>72</td><td></td></tr>
<tr><td>0D</td><td>CORE DETH</td><td>CCD correction control</td><td>04</td><td>04</td></tr>
<tr><td>0E</td><td>CORE VTR DELAY</td><td>1HDL longitudinal setting during VTR playback</td><td>16</td><td>16</td></tr>
<tr><td>0F</td><td>CORE APCN4</td><td>Horizontal aperture setting</td><td>35</td><td>35</td></tr>
<tr><td>10</td><td>CORE APCN5</td><td>Vertical aperture setting</td><td>3D</td><td>3D</td></tr>
<tr><td>11</td><td>CORE EFECT</td><td>Special effect control</td><td>A8</td><td>A8</td></tr>
<tr><td>12</td><td>CORE MATR</td><td>BLUE matrix constant</td><td>27</td><td>27</td></tr>
<tr><td>13</td><td>CORE MATB</td><td>RED matrix constant</td><td>6C</td><td>6C</td></tr>
<tr><td>14</td><td>CORE BURST LEVEL</td><td>Burst flag level setting, color modulation ON/OFF<table><tr><th>Data</th><th>Adjustment modeAdjustment</th></tr><tr><td>2C</td><td>Normal level</td></tr><tr><td>2E</td><td>Color modulation stopped</td></tr></table></td><td>2C</td><td>2C</td></tr>
<tr><td>15</td><td>CORE CHROMA DLY</td><td>Y/C delay adjustment</td><td>07</td><td>07</td></tr>
<tr><td>16</td><td>CORE Y SETUP</td><td>Set up level setting</td><td>06</td><td>06</td></tr>
<tr><td>17</td><td>CORE VHAPCN</td><td>Slice and level setting of the aperture signal</td><td>18</td><td>18</td></tr>
<tr><td>18</td><td>CORE B-Y GAIN</td><td>B–Y GAIN</td><td>13</td><td></td></tr>
<tr><td>19</td><td>CORE R-Y GAIN</td><td>R–Y GAIN } Color reproduction adjustments</td><td>11</td><td></td></tr>
<tr><td>1A</td><td>CORE R-Y HUE</td><td>R–Y HUE</td><td>FF</td><td></td></tr>
<tr><td>1B</td><td>CORE B-Y HUE</td><td>B–Y HUE</td><td>FD</td><td></td></tr>
<tr><td>1C</td><td>CS/APCCUT</td><td>Low luminance intensity aperture and chroma suppress level</td><td>22</td><td>22</td></tr>
</table>

Table 7-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data		00	
1F	CCD DEFECT1	CCD correction data		00	
20	CCD DEFECT2	CCD correction data		00	
21	CCD DEFECT3	CCD correction data		00	
22	CCD DEFECT4	CCD correction data		00	
23	CCD DEFECT5	CCD correction data		00	
24	CCD DEFECT6	CCD correction data		00	
25	CCD DEFECT7	CCD correction data		00	
26	CCD DEFECT8	CCD correction data		00	
27	CCD DEFECT9	CCD correction data		00	
28	CCD DEFECT10	CCD correction data		00	
29	CCD DEFECT11	CCD correction data		00	
2A	CCD DEFECT12	CCD correction data		00	
2B	CCD DEFECT13	CCD correction data		00	
2C	CCD DEFECT14	CCD correction data		00	
2D	RREF L	3200k Red standard data LSB	Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB		5F	
2F	GREF L	3200k Green standard data LSB		D4	
30	GREF H	3200k Green standard data MSB		63	
31	BREF L	3200k Blue standard data LSB		3B	
32	BREF H	3200k Blue standard data MSB		2C	
33	RCONTREF	3200k RCONT adjustment value	Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value		4A	
35	AWB NOWM R	Red regular correction coefficient	Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient		96	
37	AWB SHUT IN	Indoor determination shutter data		A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data		A0	A0
39	AWB IRIS IN	Indoor determination hole data	IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hole data		7F	
3B	AWB G LEVEL	High luminance section green integral level		02	02
3C	AWB G WIDTH	High luminance section green integral level range		03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient		00	
3F	AWB SELECT	AWB mode selection		00	00
40	AWB DIFF	Standard difference from the outdoor fixed value		0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient		48	48
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient		78	78
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient		60	60
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient		40	40
45	AWB TOP SLP R	AWB incoming frame top R coefficient		66	66
46	AWB TOP SLP B	AWB incoming frame top B coefficient		18	18

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>8C</td><td>8C</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>66</td><td>66</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>59</td><td>59</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5E</td><td>5E</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>01</td><td>High speed tracking mode</td></tr>
<tr><td>10</td><td>Normal</td></tr>
</table></td><td>10</td><td>10</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Normal</td></tr>
<tr><td>D0</td><td>AWB adjustment mode</td></tr>
<tr><td>F1</td><td>All area tracking mode</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1E</td><td>1E</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (3).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response DOWN side	30	30
6B	JITEISU UP	Constant during loop response UP side	10	10
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYAKOU JITEISU	Constant during auto back light response	08	08
76	SABUN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	A0	A0
78	FUZZY RULE2	Correction amount 2 for auto back light	D0	D0
79	FUZZY RULE3	Correction amount 3 for auto back light	E0	E0
7A	FUZZY RULE4	Correction amount 4 for auto back light	B0	B0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	90	90
7D	FUZZY RULE7	Correction amount 7 for auto back light	B0	B0
7E	FUZZY RULE8	Correction amount 8 for auto back light	B8	B8
7F	FUZZY RULE9	Correction amount 9 for auto back light	98	98
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Iris limit value (lower)	42	42
82	IRIS MIN H	Iris limit value (upper)	02	02
83	DELTA SHUT GAIN	Shutter smoothing value setting	04	04
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE LIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	90	
8B	STEP ZERO SPAN	Frange back value 2	A0	
8C	ZOOM SPD FAST	Zoom speed (fast)	60	60
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	59	59
8E	ZS INIT SLOW	Zoom speed initial value (slow)	59	59
8F	ZS INIT FAST	Zoom speed initial value (fast)	59	59
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11
92	ZS L	Zoom servo coefficient L	04	04

Table 7-2 (4).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>22</td><td>22</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THRL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>C6</td><td>C6</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSL</td><td>Constant for flange back adjustment</td><td>02</td><td>02</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>07</td><td>07</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>17</td><td>17</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB ZOOM SLOW</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>08</td><td>Zoom, Focus fixed</td></tr>
<tr><td>00</td><td>Normal</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Nomal</td></tr>
<tr><td>01</td><td>Flange back adjustment</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF DELAY</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>20</td><td>20</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover
<table>
<tr><th>Data</th><th>DDS display mode</th></tr>
<tr><td>00</td><td>Y sampling display</td></tr>
<tr><td>02</td><td>R–Y display</td></tr>
<tr><td>40</td><td>HALL data display</td></tr>
<tr><td>82</td><td>R ratio display</td></tr>
<tr><td>83</td><td>B ratio display</td></tr>
<tr><td>91</td><td>R, B ratio (M) display</td></tr>
<tr><td>B0</td><td>Focus step display</td></tr>
</table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (5).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	CORE MODE DATA 13 byte	12	12
B1	CORE Y GAIN	CORE FIELD DATA 0 byte	3F	3F
B2	E LOW LIGHT START	Low light chroma suppress start point	30	30
B3				
B4	YAKEI LEVEL	YAKEI mode gain setting value	40	40
B5				
B6	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	60	60
B7	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	75	75
B8				
B9				
BA	AWB IN B HYS	Hysteresis of AWB indoor BLUE	04	04
BB	AWB IN R HYS	Hysteresis of AWB indoor RED	02	02
BC	AWB KAKE NORM R	ADD: 35 NORM R × 1000H	20	20
BD	AWB KAKE NORM B	ADD: 36 NORM B × 1000H	20	20
BE	MF STEP CHNGE	Coefficent of MODE 2 THR	46	46
BF	MD2 LOWCON SPD	Speed for Low-contrast at MODE 2	07	07
C0	MAX CHECK NG CNT	MAX CHECK NG count	1E	1E
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	Low light AE fluctuation THR 1	28	28
C3	AE Y MIN	Low light AE fluctuation THR 2	20	20
C4	MD2 SPD	Focus speed at MODE 2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOW CON THR	THR 1 for judging Low-contrast at MODE 2	10	10
C7	LOW CON THR2	THR 2 for judging Low-contrast at MODE 2	20	20
C8~EF		Not used		
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01	Camera adjustment mode (1), F page write protect released
		10	Normal
		11	Camera adjustment mode (2), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00	Normal
		01	IRIS OPEN, AGC HOLD
		03	IRIS CLOSE1, AGC HOLD
		05	IRIS CLOSE2, AGC MIN
		07	IRIS CLOSE3, AGC MAX
		09	ND0.5 SHUTTER (PAL=1/160, NTSC=1/190)
		0B	ND0.8 SHUTTER (PAL=1/320, NTSC=1/380)
		0D	AWB PRESET1: 3200K PRESET DATA take in
		0F	WB 3200K PRESET: Indoor white balance mode
		11	AWB PRESET2: Preparation of 3200K PRESET DATA take in
		13	ZOOM HUNTING1 ZOOM SPDSLOW
		15	ZOOM HUNTING2 ZOOM SPDFAST
		17	AE FB adjustment mode (IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL))
		1D	EEPROM PRE WRITE: Page F initial data write
05	Shutter mode	00	NTSC=1/60, PAL=1/50
		19	1/2000
06	FOCUS limiter ON/OFF	00	FOCUS limiter ON (Normal)
		01	FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00	ZOOM limiter ON (Normal)
		01	ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00	Normal
		01	ZOOM speed SLOW
		02	ZOOM speed FAST
		03	ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00	Camera Adjustment not completed
		01	Camera adjustment completed
11 ★	ROM VERSION	01	Camera micro processor ver1
		02	Camera micro processor ver2
		03	Camera micro processor ver3
0C ★	LENS INITIAL END	00	During the initial operation of the lens
		01	Lens initial operation completed

Addresses with ★ are exclusively for reading.

Table 7-3.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-4.

7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-122 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	NC	4	CAM SI
5	NC	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 7-5.

7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-48 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑤ and ⑧ of CN901
Specified value	4.92 ± 0.15 Vdc
D4V check	
Measurement point	Pin ④ of CN901
Specified value	3.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ⑦ and ⑩ of CN901
Specified value	$4.86 \begin{smallmatrix}+0.15\\-0.11\end{smallmatrix}$ Vdc
CAM 15V check	
Measurement point	Pin ⑫ of CN901
Specified value	15.05 ± 0.4 Vdc
CAM –9V check	
Measurement point	Pin ⑨ of CN901
Specified value	–8.5 ± 0.4 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F data initialization execution.
The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data
00 (ID)	3D
0A (LOW LIGHT CS)	C0
A2 (FB ZOOM SL)	02
A3 (FB ZOOM SH)	07
B2 (E LOW LIGHT START)	30

[Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.1	CXP80624-417R	01
Ver.2	CXP80624-424R	02
Ver.3	CXP80624-434R	03

4. 28 MHz Original Oscillation Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑰ of IC706 (14 MHz)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14318181 ± 71 Hz

Adjusting method:

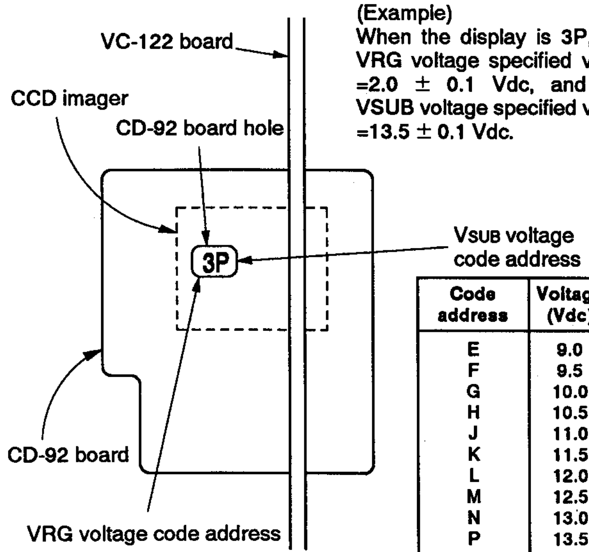
1) Use CT801 to adjust the oscillation frequency to 14318181 ± 71 Hz.

5. V SUB Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =13.5 ± 0.1 Vdc.

VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

VSUB voltage code address

Code address	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 7-7.

6. VRG Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of VC-122 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-122 board.

8. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).
   $A'=W_2'+K_1'-W_1'-K_2'$ ··························Equation 1
   $B'=W_1'-K_1'$ ··Equation 2
   $X_1'=\frac{2048+(48 \times A')-(16 \times B')}{A'}$ ················Equation 3
14) Convert X_1' to hexadecimal notation, and obtain X_1.
   (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to hexadecimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).
   $C'=W_0'-B'-51$ ···································Equation 4
   $X_2'=\frac{(128-B')\times(X_1'-48)+48 \times C'}{C'}$ ···········Equation 5
   (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
   (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

9. Flange Back Adjustment

Subject	Chart for flange back adjustment (1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

10. Flange Back Check

Subject	Siemens star (2m (or 1.4m) from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 5$

Checking method:

1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
5) Turn off the auto-focus.
6) Shoot the Siemens star with the zoom TELE end.
7) Rotate the focus ring, and adjust the focus.
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as D_1.
10) Rotate the focus ring, and adjust the focus.
    Read the focus step value here, and take the value as D_2.
11) Check that $D_2=D_1 \pm 5$.

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

11. SYNC Level Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=140 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

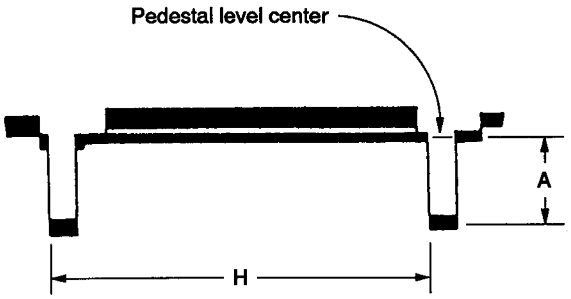


Fig. 7-8.

12. BURST Level Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=140 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

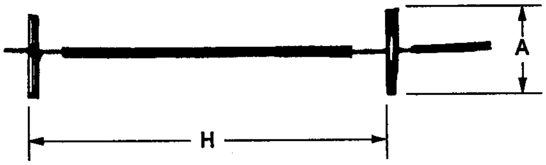


Fig. 7-9.

13. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Turn the main power supply (6.3V) off.

14. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

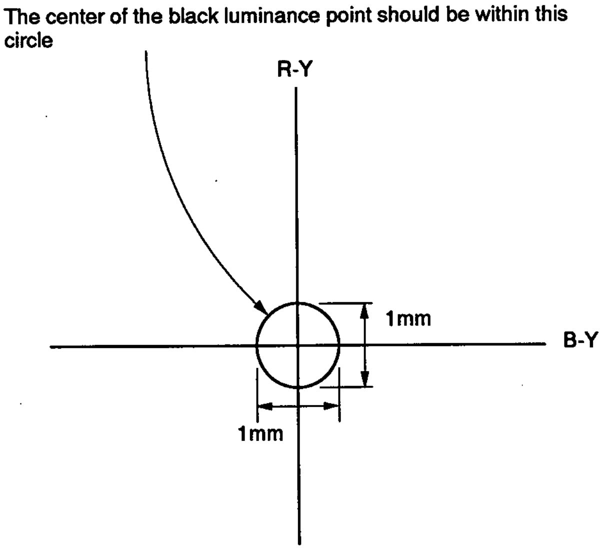

The center of the black luminance point should be within this circle
R-Y
1mm
B-Y
1mm

Fig. 7-10.

15. Picture Frame Setting

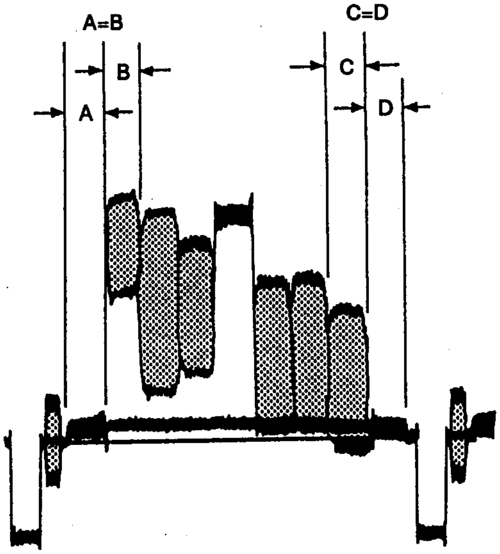
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

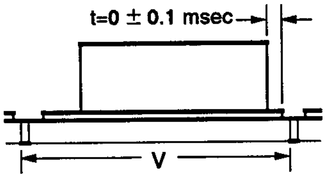


Fig. 7-11.

Check on the TV monitor

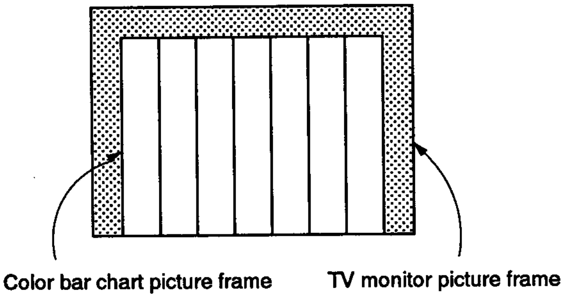

Color bar chart picture frame
TV monitor picture frame

Fig. 7-12.

16. IRIS Level Adjustment (VC-122 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

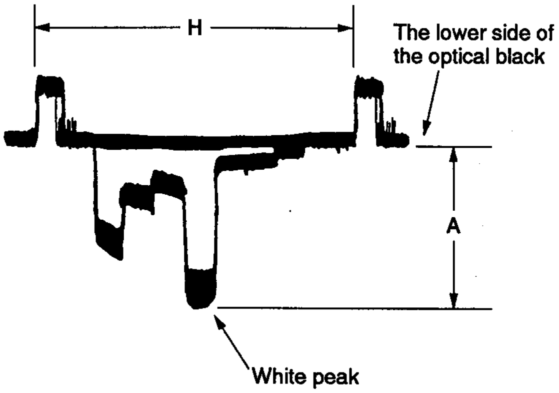


Fig. 7-13.

17. MAX GAIN Adjustment (VC-122 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=260 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

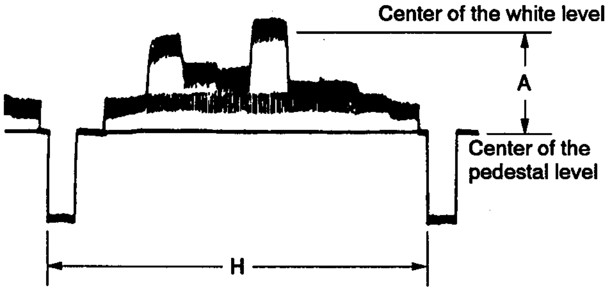


Fig. 7-14.

18. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the ND0.5 shutter mode)

19. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
(Protect mode setting)

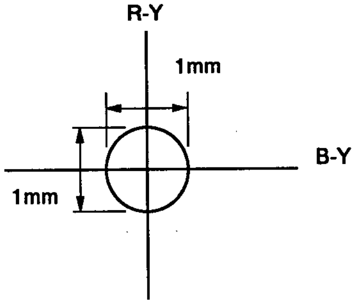


Fig. 7-15.

20. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

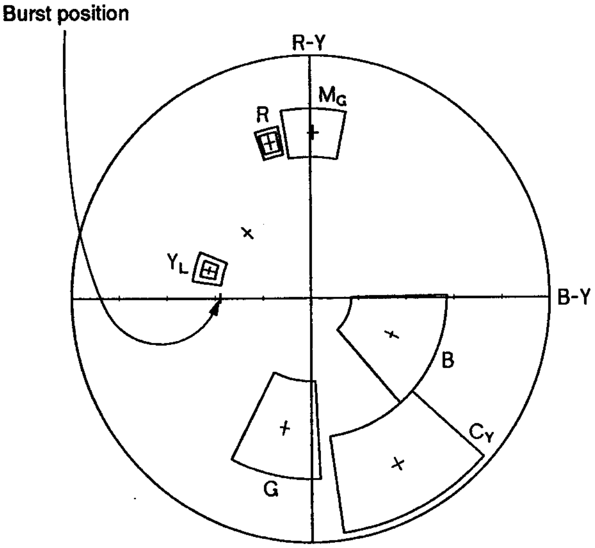


Fig. 7-16.

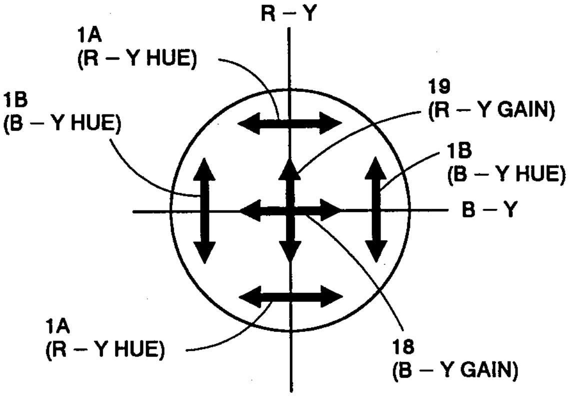


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

21. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
(Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
(Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
(Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)

22. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2A80 ± 40 B ratio 5A80 ± 40

Note: Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
(R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2A80 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
(B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5A80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)

23. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-18. A to C

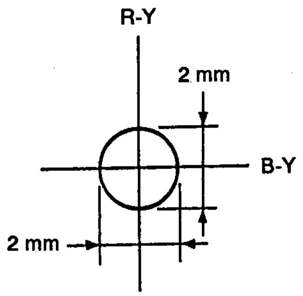


Fig. 7-18. A

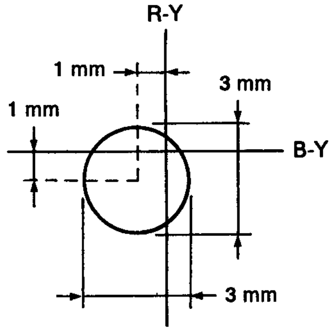


Fig. 7-18. B

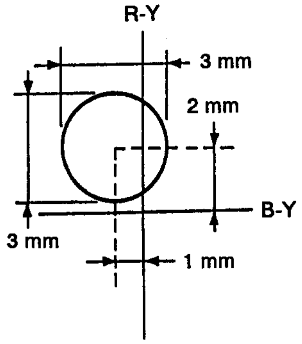


Fig. 7-18. C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
   (Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
   (Auto white balance outdoor mode check)

Processing after completing adjustments

1) Set data: 10 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

24. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (Note 2), and set to Y_1.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data (Note 2), and set to R_1.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data (Note 2), and set to Y_2.
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data (Note 2), and set to R_2.
14) Convert Y_1, R_1, Y_2, R_2 to decimal notation to obtain Y_1', R_1', Y_2' and R_2'.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
16) Calculate D_{3D} from the following table
    (D_{3D} is hexadecimal notation)

X_1' value	D_{3D}
$-1 \leqq X_1' \leqq 1$	F0
$X_1'>1$	F1
$X_1'<-1$	FF

17) Set data: D_{3D} to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
19) Calculate D_{3E} from the following table.

X_2' value	D_{3E}
$X_2' \geqq 0$	00
$0>X_2' \geqq -1$	01
$-1>X_2'$	02

20) Set data: D_{3E} to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 2C to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

Note 2: The right two digits of the display data at the bottom right of the EVF or monitor TV. The R–Y data is above 80. When the DDS display data is below 80, set data: 01 to page F, address: AF and press the PAUSE button of the adjusting remote control unit.

25. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=680 ± 40 mV SYNC level=285 ± 20 mV BURST level=280 ± 30 mVp-p

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

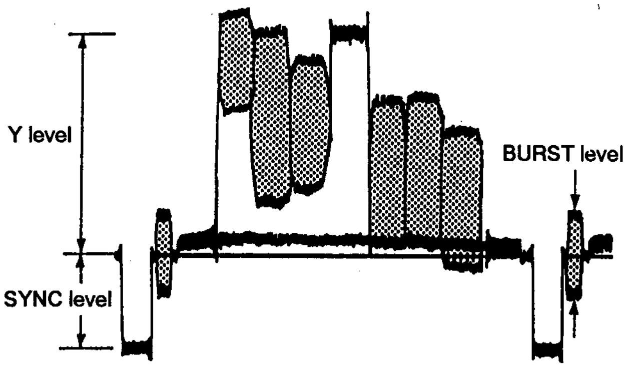


Fig. 7-19.

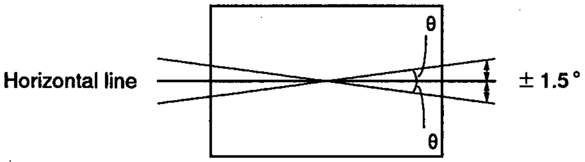
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)


θ
θ
Horizontal line
± 1.5°

Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 7-21.

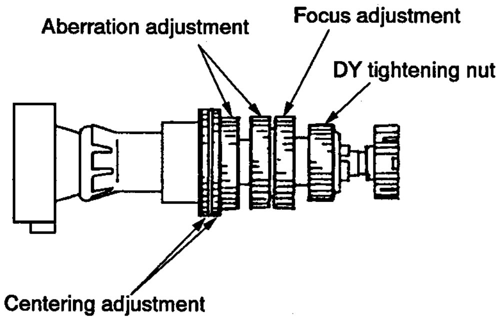

Aberration adjustment
Focus adjustment
DY tightening nut
Centering adjustment

Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)

   Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

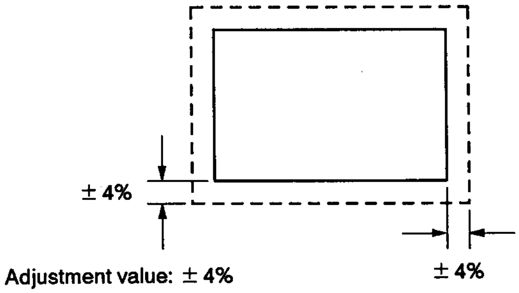


Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

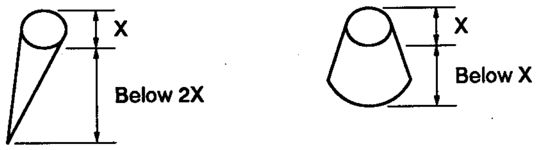


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

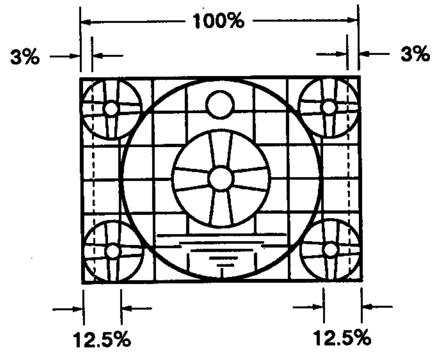
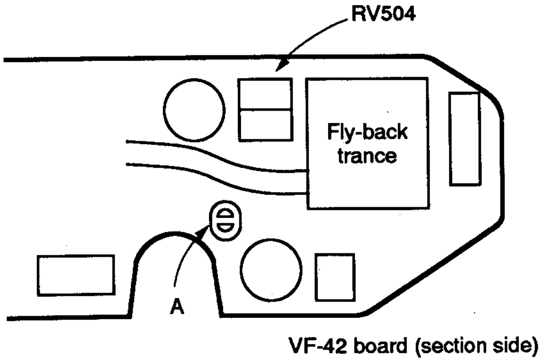


Fig. 7-25.



Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

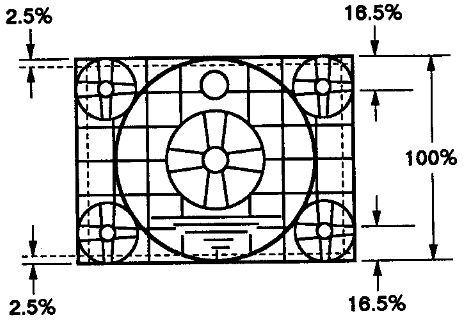


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

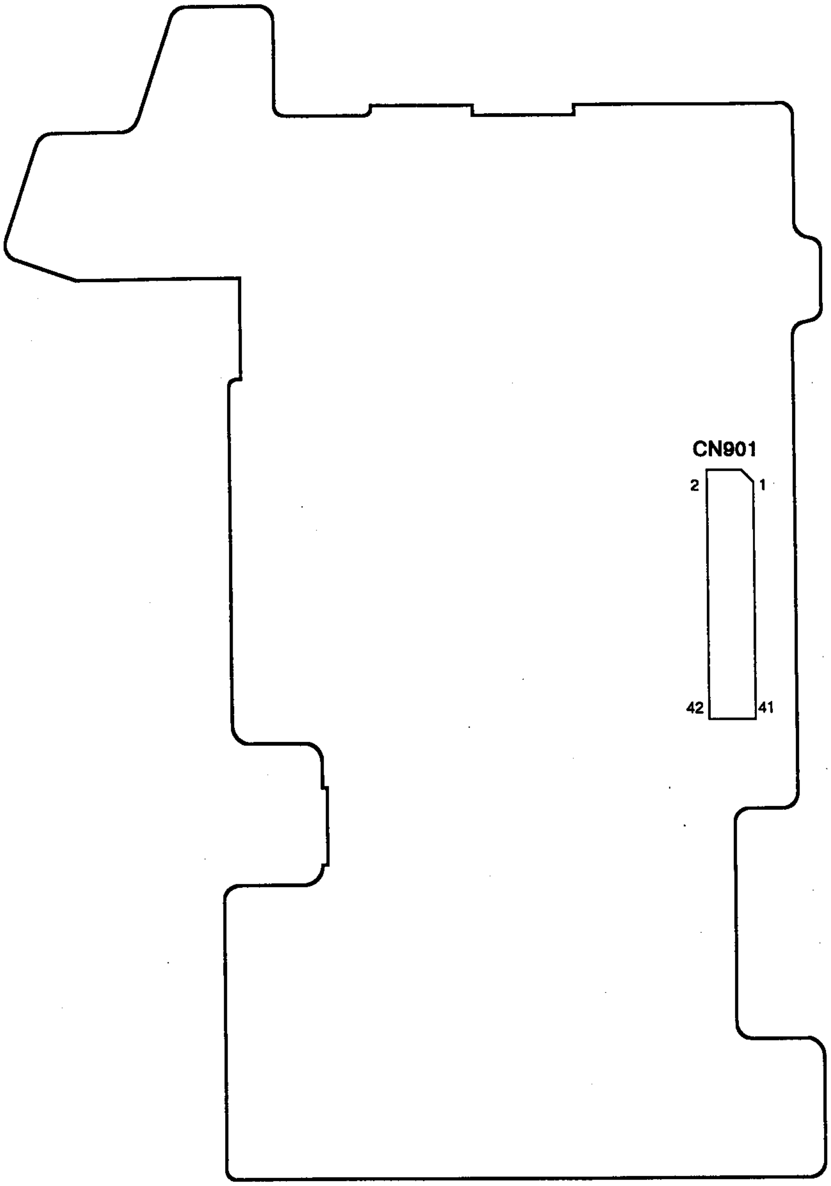
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

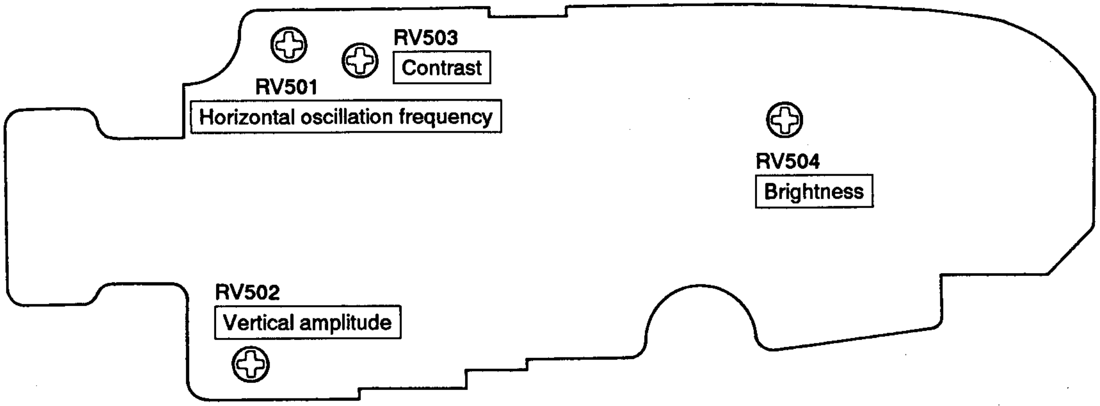
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

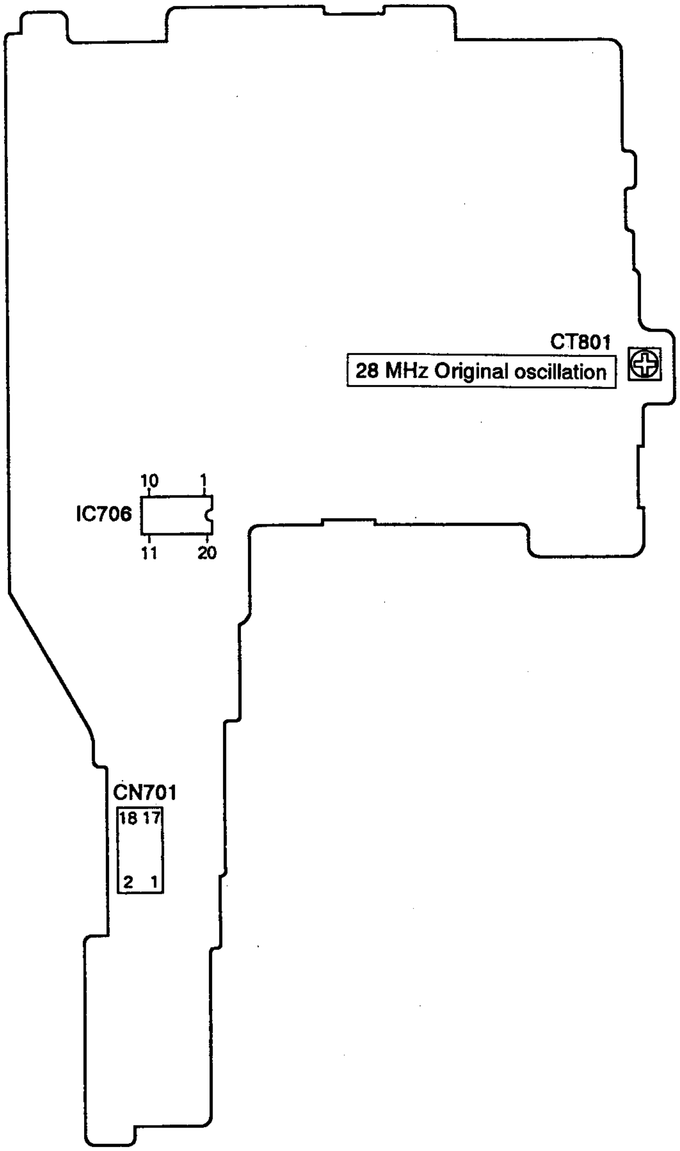
DD-48 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

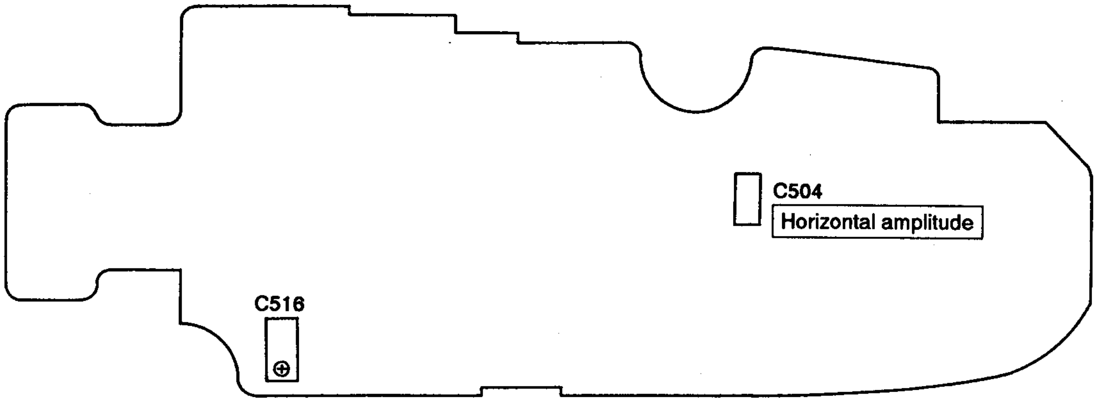
VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VC-122 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
10
1
IC706
11
20
CN701
18 17
2 1

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

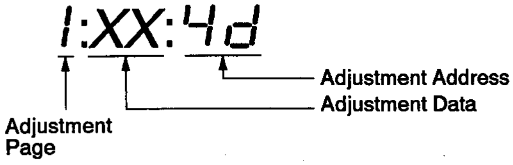
SECTION 8
MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]
1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-95 board CN002 pin ③ (PB RF)
   CH2: VS-95 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1NP: 8-967-995-02).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet sides. If not flat, make adjustment as follows. (Refer to Fig. 8-1 and 8-2)

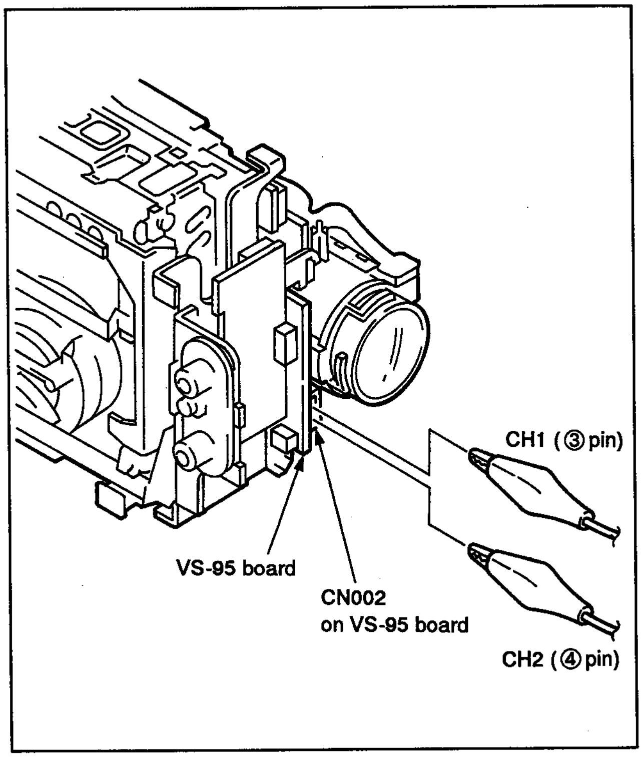


Fig.8-1.

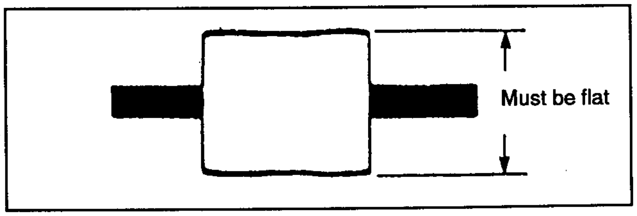


Fig.8-2.

9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
    1. Connect the adjustment remote controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on the HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to 4B [6B].[Note 1]
       (REC key forbidden accept mode cancel)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
    1. Connect the collector of Q200 on the VS-95 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
    2. Turn on the HOLD switch of the adjustment remote controller.
    3. Select the page: 1 address: A3, and set data to 01.
    4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
    5. Turn off the HOLD switch of the adjustment remote controller.
    6. Press REC buttons of the adjustment remote controller.
    7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
    1. Connect the adjustment remoter controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to 4A [6A].[Note 1]
       (Setting of the REC key forbidden accept mode)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

Note 1: No mark : US, Canadian Model
[ ] : E model

9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-95 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-138 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ㉜ of IC151 on the VS-95 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

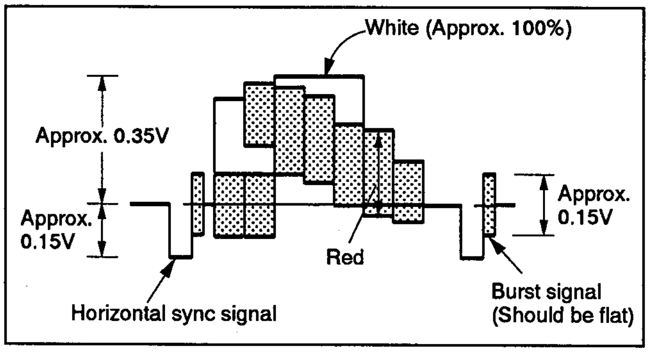


Fig. 9-2. Color Bar Signal of the Pattern Generator

9-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1NP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6N	L	MP	SP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. } Color bar section Repeated 4 times 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4NL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		

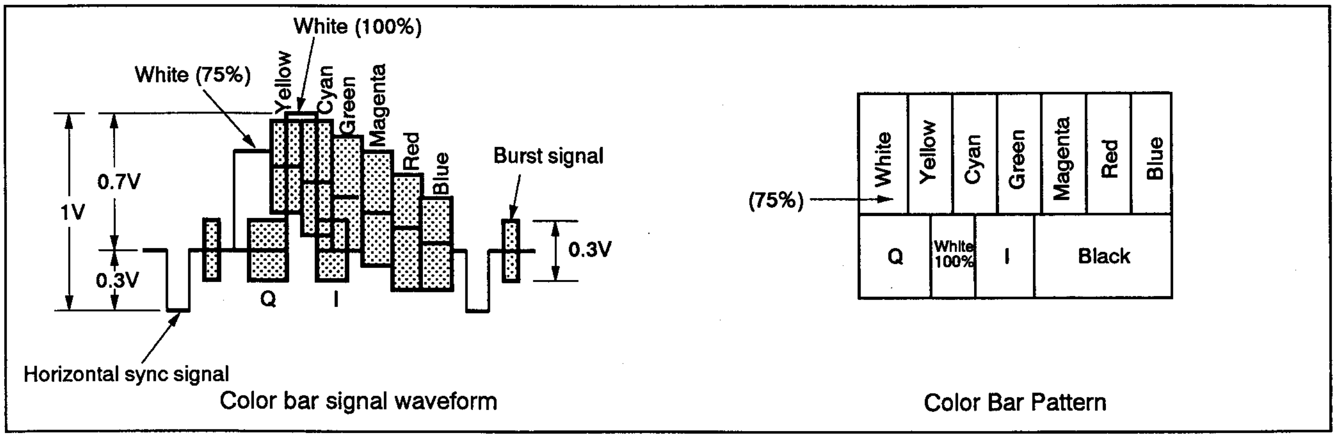
Note: Recording mode
L ······· Conventional mode
E ······· hi8 (hi band) mode

Tape type
MP····· Particle type metal tape
ME····· Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal (Terminated at 75 Ω)


White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.7V
1V
0.3V
0.3V
Q
I
Horizontal sync signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color bar signal waveform

Color Bar Pattern

Fig. 9-3. Color Bar Signals of the Alignment Tape

9-1-7. Output Level and Impedance

Video outputPin jack
Output signal: 1 Vp-p, 75 unbalanced, sync negative
Audio outputPin jack
Specified output: –7.5 dBs
Output impedance: Below 2.2 kΩ

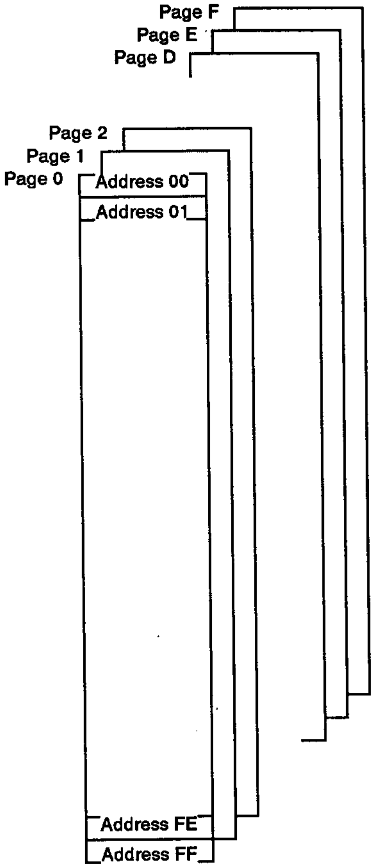
9-1-8. Service Mode

1. Setting the Service mode

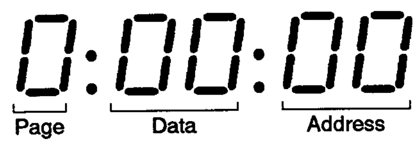
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

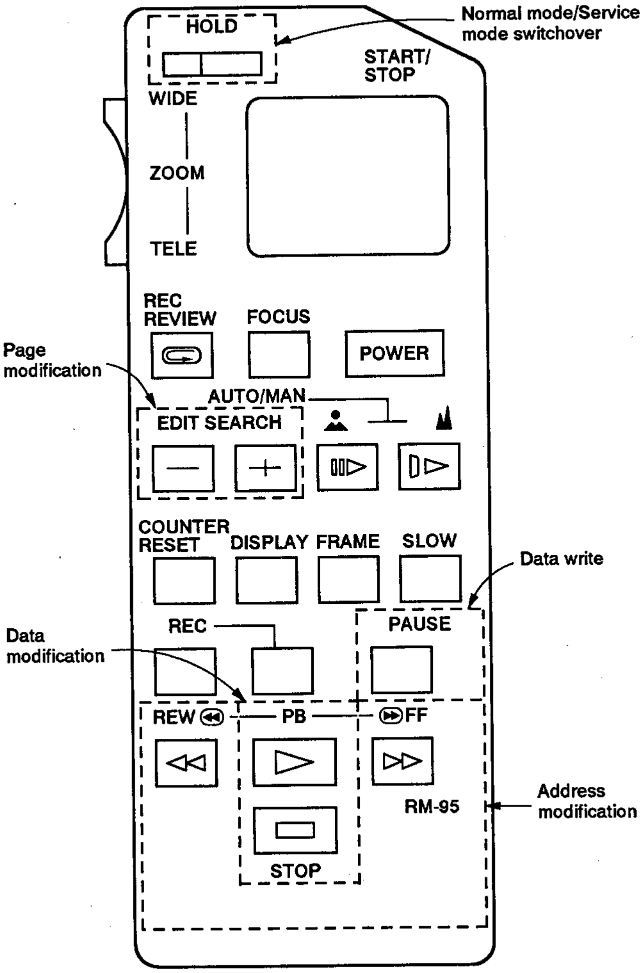
(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Adjusting Remote Control Unit LCD Display

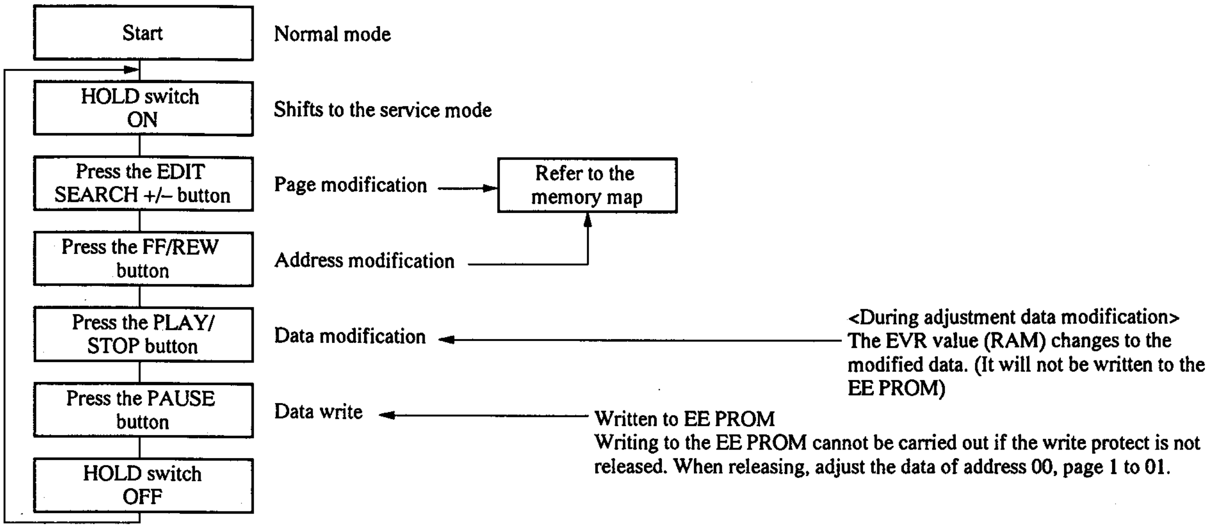

0:00:00
Page
Data
Address

Adjusting remote control unit RM-95 (J-6082-053-B)


HOLD
Normal mode/Service mode switchover
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

Page	Page allocation	Description
0	Not used	
1	Mode Control RAM, I/O	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2~4	Mechanical Control RAM, I/O	RAM and I/O memory area of the mechanical controller.
5	Not used	
6~8	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
9	Not used	
A	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
B, C	Not used	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data.
E	Not used	
F	Camera EE-PROM	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off.

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01.

Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Write the data to the EE PROM. RAM	Pause

2. Types of Self-diagnostic Feature

MODE		Contents
TEST	Camera adjustment	Refer to Camera Adjustment
	Switching position adjustment	Refer to each adjustment page
	Battery DOWN adjustment	
	Video, Audio adjustment	
ADJUST	Pass Adjustment track shift	When adjusting tape pass, set this mode and shift the tracking.
	Emergency STOP inhibition	Detection of emergency is inhibited. This allows the following items. • Power is not turned off when the battery is ended. • SP/LP is not automatically distinguished. • Emergence is not detected except for TOP/END detection of the TAPE.
	Read of emergence code	The following functions are added to the emergency display function currently in use. ① The lithium battery is not required because to memorize into EE-PROM is allowed. ② The first emergency and the last emergency are memorized. ③ The mode when the emergency is generated is memorized, in addition to the emergency contents.
	Motor single check	Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled. • Drum motor • Capstan motor • Loading motor
	Function switch check	The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit.
	Mechanical switch check	The contents of the mechanical switch and the mode switch can be confirmed.
	Sensor check	The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor.
	Reception contents check of wireless remote control	The received code contents of the remote control code can be confirmed.

3. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

4. Page F Write Protect

Release/set the page F write protect.

Page 6	Address 00

Data	Function
10	Normal (Write protect condition)
01	Write protect release

5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover 5 minutes pause release inhibition Power off inhibition • release by battery end
02	Test mode 2 1'CH frequency response adjustment (Not used) SP/LP automatic distinction inhibition, manual switchover
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

6. Emergency code

Troubles (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	DRUM FG error during drum start up
06	DRUM PG error during drum start up
07	DRUM FG error during drum regular condition
08	DRUM PG error during drum regular condition
09	DRUM Phase error during drum regular

7. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode

……The operation mode when the first error is generated

Page D	Address 09

Last emergency mode

……The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

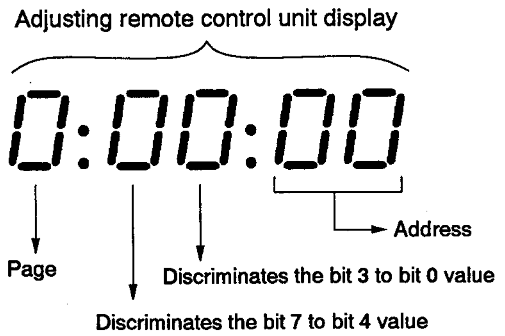
※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
36	–X1
37	–1/5 SLOW
46	CUE
47	1/10 SLOW
56	REVIEW
57	–1/10 SLOW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
76	–X2
77	–FRAME
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(–)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

	Remote Control Unit Display	Bit Value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

9. Check of Tape Distinction Switch, etc.

Page 1	Address 3E

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
				$\overline{\text{REC PROOF}}$	ME/$\overline{\text{MP}}$	Hi8/$\overline{\text{Normal}}$	

Bit3: "1"=Recording impossible
"0"=Recording possible

Bit2: "1"=ME tape
"0"=MP tape

Bit1: "1"=Hi8 mode playback
"0"=Normal mode playback

Page 1	Address 23

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
					$\overline{\text{CC DOWN}}$		

Bit2: "0"=During cassette compartment lock

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
V MUTE	A MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	LP/$\overline{\text{SP}}$

Bit0: "1"=LP mode playback
"0"=SP mode playback

Bit1: "1"=SYNC is detected
"0"=SYNC is not detected

Bit2: "1"=CLOG is detected
"0"=Normal

Bit3: "1"=When the PB RF signals are being playback normaly
"0"=Others

Bit4: "1"=JOG mode
"0"=Other

Bit5: "1"=Playback mode
"0"=Others

Bit6: "1"=AUDIO MUTE: ON
"0"=AUDIO MUTE: OFF

Bit7: "1"=VIDEO MUTE: ON
"0"=VIDEO MUTE: OFF

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
						DEW	

"0"=Dew outbreak
"1"=Others

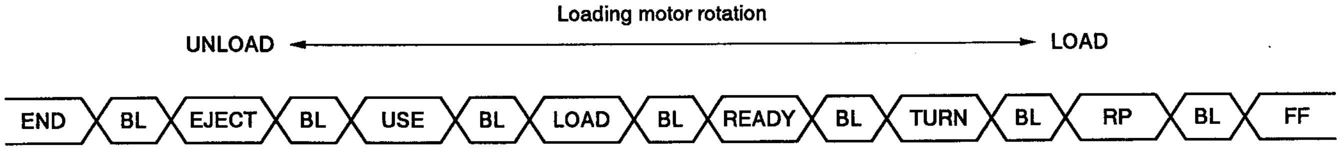
10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

Page 1	Address 3E

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 0	MSW 1	MSW 2					

MSW 0	MSW 1	MSW 2	POSITION	FUNCTION	$\overline{\text{CC DOWN}}$
1	1	1	BL	Interval of each position	
0	1	1	END	FULL END processing (T side lock removal)	1
0	0	1	EJECT	Cassette compartment ejection	1
1	0	1	USE	EJECTED (Unskate end)	1
0	0	1	LOAD	LOADING (Skate in)	0
1	0	0	READY	NORMAL STOP position	0
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0
0	1	0	RP	PB, REC, RVS, REV, REW	0
0	0	0	FF	FF/CUE	0


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data: 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

Data	A/D Port
00	Pin (62): AN0 (T REEL FG)
01	Pin (61): AN1 (S REEL FG)
02	Pin (60): AN2 (ATF ERROR)
03	Pin (59): AN3 (BATT SENS)
04	Pin (58): AN4 ($\overline{\mathrm{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

12. Tape Top/End Sensor Condition Check

Page 4	Address 0A

Checking method:

1) Set data: 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

13. Battery Voltage Check

Page 4	Address 10

Adjusting Remote Control Unit Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4Vdc
E0	Approx. 8.8Vdc
D0	Approx. 8.2Vdc
C0	Approx. 7.5Vdc
B0	Approx. 6.9Vdc
A0	Approx. 6.3Vdc
90	Approx. 5.6Vdc
80	Approx. 5.0Vdc

14. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

15. Mode control micro processor key matrix check

The key input can be checked.

Page 1	Address 68~6D

	Bit7	Bit6 (K IN 6)	Bit5 (K IN 5)	Bit4 (K IN 4)	Bit3 (K IN 3)	Bit2 (K IN 2)	Bit1 (K IN 1)	Bit0 (K IN 0)
Address 68 (K OUT 0)		LENS COVER OPEN (MF-191 S973)	VTR POWER (VK-27 S977)	EDIT SEARCH (CUE) (VK-27 S981)	PAUSE (VK-27 S984)	EDIT SEARCH (+) (VK-27 S981)	EJECT (DD-48 S901)	
Address 69 (K OUT 1)		BUZZER ON/OFF (ED-35 S986)	CAMERA POWER (VK-27 S977 SW-205 S519)	FF (VK-27 S983)	PLAY (VK-27 S980)	REW (VK-27 S979)	STOP (VK-27 S976)	
Address 6A (K OUT 2)		NIGHT (CF-32 S997)			EDIT SEARCH (REV) (VK-27 S978)	EDIT SEARCH (–) (VK-27 S978)	COUNTER RESET (CF-32 S995)	EDIT ON/OFF (ED-35 S990)
Address 6B (K OUT 3)		PORTREIT (CF-32 S997)			TIME (CF-32 S996)	DATE (CF-32 S993)		
Address 6C (K OUT 4)		SPORTS (CF-32 S997)		AUTO FOCUS ON/OFF (MF-191 S971)				
Address 6D (K OUT 5)		HIGH SPEED SHUTTER (CF-32 S997)	AREA (ED-35 S989)	DST or SUMMER TIME (ED-35 S987)		FADER (CF-32 S991)	START/ STOP (SW-205 S520)	REMOTE COMMANDER (ED-35 S988)

"1"=key switch ON
"0"=key switch OFF

16. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	Data
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19
SLOW	23

17. EDIT Switch, Remote Commander Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
REC MODE (SP/LP)	REMOTE COMMANDER		EDIT				

Bit7:
"1"=LP
"0"=SP

Bit6:
"1"=OFF
"0"=ON

Bit4:
"1"=EDIT ON
"0"=EDIT OFF

18. White Balance Mode and Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page: 1, address: A3 is set to 04.

Data	White Balance Mode
∗ 1	INDOOR
∗ 2	OUTDOOR
∗ 3	HOLD
∗ 6	AUTO

Data	Focus Mode
0 ∗	Manual
1 ∗	Automatic

∗ : 0 to F

19. LCD, LED Check, etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
04	Camera function renewal prohibited

20. Page D Address List

Note 1: The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

Note 2: The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

*1 No mark : US, Canadian model
[ ] : E model

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	Category code	Not used		
01	Test mode		00	00
02	Destination flag		4A[6A]*1	4A[6A]*1
03	BATT END	Battery end adjustment	8C	
04	SW POSITION	SW POSITION adjustment	00	
05	SW POSITION	SW POSITION adjustment	0A	
06	EMERGENCY code (FIRST)	Error code and mode are memorized. Rewrite the data of these addresses to 00 after repairs/adjustments	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP Normal SP)	CXA1207 serial data	24	24
0B	SR DATA (MP Normal LP)	CXA1207 serial data	3E	3E
0C	SR DATA (ME Hi8 SP)	CXA1207 serial data	24	24
0D	SR DATA (ME Hi8 LP)	CXA1207 serial data	3E	3E
0E	SR DATA (ME Normal SP)	CXA1207 serial data	24	24
0F	SR DATA (ME Normal LP)	CXA1207 serial data	3E	3E
10	SR DATA (MP Hi8 SP)	CXA1207 serial data	24	24
11	SR DATA (MP Hi8 LP)	CXA1207 serial data	3E	3E
12	SR DATA (EDIT ON Normal)	CXA1207 serial data	3E	3E
13	SR DATA (EDIT ON Hi8)	CXA1207 serial data	3E	3E
14	CAM TITLE BLU R-Y	Camera titler color adjustment [Blue]. Not used		
15	CAM TITLE BLU B-Y	Camera titler color adjustment [Blue]. Not used		
16	CAM TITLE GRN R-Y	Camera titler color adjustment [Green]. Not used		
17	CAM TITLE GRN B-Y	Camera titler color adjustment [Green]. Not used		
18	CAM TITLE CYN R-Y	Camera titler color adjustment [Light blue]. Not used		
19	CAM TITLE CYN B-Y	Camera titler color adjustment [Light blue]. Not used		
1A	CAM TITLE RED R-Y	Camera titler color adjustment [Red]. Not used		
1B	CAM TITLE RED B-Y	Camera titler color adjustment [Red]. Not used		
1C	CAM TITLE VIO R-Y	Camera titler color adjustment [Violet]. Not used		
1D	CAM TITLE VIO B-Y	Camera titler color adjustment [Violet]. Not used		
1E	CAM TITLE YEL R-Y	Camera titler color adjustment [Yellow]. Not used		
1F	CAM TITLE YEL B-Y	Camera titler color adjustment [Yellow]. Not used		
20	Permission plug		04	04
21	Adjustment plug	FORCED VTR ON, CAM ON etc DATA / MODE 01 FORCED CAMERA POWER ON 02 FORCED VTR POWER ON	00	00
22~29		Not used		

Table 9-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	**Memo column**
2A	SLOW ADJ (FOWARD)		00	00
2B	SLOW ADJ (REVERSE)		00	00
2C	STILL ADJ		00	00
2D	BATT REMAIN LEVEL 1	Amount of remaining battery 1	A0	
2E	BATT REMAIN LEVEL 2	Amount of remaining battery 2	99	
2F	BATT REMAIN LEVEL 3	Amount of remaining battery 3	94	
30~42		Not used		
43	1-ch M.T NORMAL	1 ch playback frequency characteristic adjustment [IC158 ②]	C0	
44				
45	2-ch M.T NORMAL	2 ch playback frequency characteristic adjustment [IC158 ③]	C0	
46	REC C RF (EE)	REC C RF level adjustment (EE) [IC156 ⑩]	B8	
47	REC C RF (PB)	REC C RF level adjustment (PB) [IC156 ⑩]	00	
48	RF CONT (ME)	ATF RF level (ME) [IC158 ⑤]	64	64
49	RF CONT (MP)	ATF RF level (MP) [IC158 ⑤]	70	70
4A	EE LEVEL	EE level adjustment [IC156 ⑮]	70	70
4B		Not used		
4C	COMB ADJ	Chroma comb filter adjustment [IC156 ③]	A8	
4D	SR-IR	IR adjustment [IC156 ②]	AE	
4E	Y-FM CARRIER (Hi8)			
4F	Y-FM CARRIER (NORMAL)	Y-FM carrier frequency adjustment [IC156 ⑤]	A8	
50	Y-FM DEVIATION (Hi8)			
51	Y-FM DEVIATION (NORMAL)	Y-FM deviation adjustment [IC156 ⑥]	95	
52	REC Y LEVEL (EE Hi8 ME)			
53	REC Y LEVEL (EE Hi8 MP)			
54	REC Y LEVEL (EE NOR ME)	REC Y recording current adjustment (ME) [IC156 ⑦]	95	
55	REC Y LEVEL (EE NOR MP)	REC Y recording current adjustment (MP) [IC156 ⑦]	95	
56	REC Y LEVEL (PB)	Playback REC Y level [IC156 ⑦]	00	00
57	PB Y LEVEL (EE)	EE PB Y level [IC158 ⑮]	00	00
58	PB Y LEVEL (Hi8)			
59	PB Y LEVEL (NORMAL)	Normal PB Y level adjustment [IC158 ⑮]	B0	
5A	EMPHASIS INPUT LEVEL	EE emphasis input level adjustment [IC156 ④]	A5	
5B	PB LINE LEVEL	Playback emphasis input level adjustment [IC156 ④]	AF	
5C~79		Not used		
7A	1.5 IR	1.5 MHz IR adjustment [IC158 ⑥]	A0	
7B	1.5 DEV	1.5 MHz deviation adjustment [IC158 ⑦]	A0	
7C~FF		Not used		

Table 9-2 (2)

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-48 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q903 collector
Measuring Instrument	Frequency counter
Specified Value	510 ± 35 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-48 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ⑪ of CN901
Specified Value	4.93 ± 0.15 Vdc
D5V check	
Measurement Point	Pins ⑤ and ⑧ of CN901
Specified Value	4.92 ± 0.15 Vdc
D4V check	
Measurement Point	Pin ④ of CN901
Specified Value	3.98 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ⑰, ⑳ of CN901
Specified Value	4.90 ± 0.15 Vdc
RP 5V check	
Measurement Point	Pin ㉒ of CN901
Specified Value	4.89 ± 0.15 Vdc
AU5V check	
Measurement Point	Pin ⑲ of CN901
Specified Value	4.90 ± 0.15 Vdc
CAM5V check	
Measurement Point	Pins ⑦ and ⑩ of CN901
Specified Value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM15V check	
Measurement Point	Pin ⑫ of CN901
Specified Value	15.05 ± 0.4 Vdc
CAM –9V check	
Measurement Point	Pin ⑨ of CN901
Specified Value	–8.5 ± 0.4 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-8. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7D

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END) 2D (BATT REMAIN LEVEL 1) 2E (BATT REMAIN LEVEL 2) 2F (BATT REMAIN LEVEL 3)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

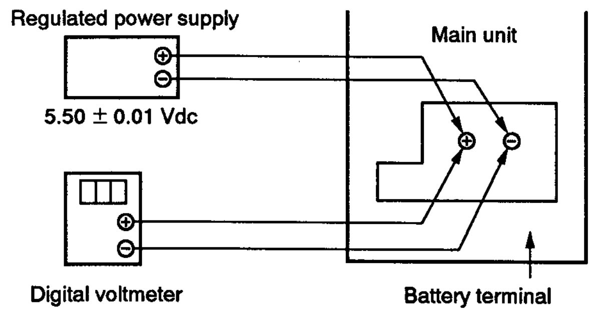


Fig. 9-4.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Set to the camera recording mode.
5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Convert DEND to decimal to obtain DEND´. (Refer to Table 7-6. "Hexadecimal notation − decimal notation conversion table")
9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D $D_{2D}'=D_{END}'+18$
   Address: 2E $D_{2E}'=D_{END}'+14$
   Address: 2F $D_{2F}'=D_{END}'+8$
   Note: After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (Test mode 1 release)
11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.70 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.58 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-95 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ④ of CN002 (RF SWP) CH2: Pin ③ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	t_1=0 ± 10 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 0A to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t_1". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position (t_1) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

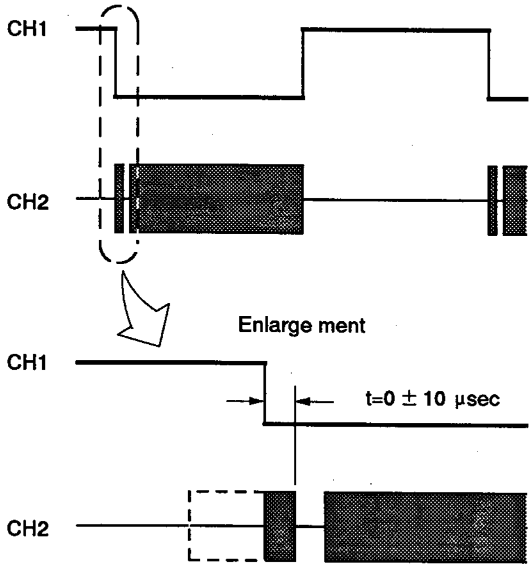


Fig. 9-5.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

[Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis f0 adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VS-95 board)

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6N)
Measurement Point	CH1: Pin ③ of CN002 EXT TRIG: Pin ④ of CN002
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	43 (MT 1CH) [45 (MT 2CH)]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Confirm that the EDIT switch is OFF position.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.

   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

   Note 3: If the waveform is not stable, set data: 03 to page: D, address: 01. (Test mode 3 setting)
   After completing adjustment, set data: 00 to page: D, address: 01.

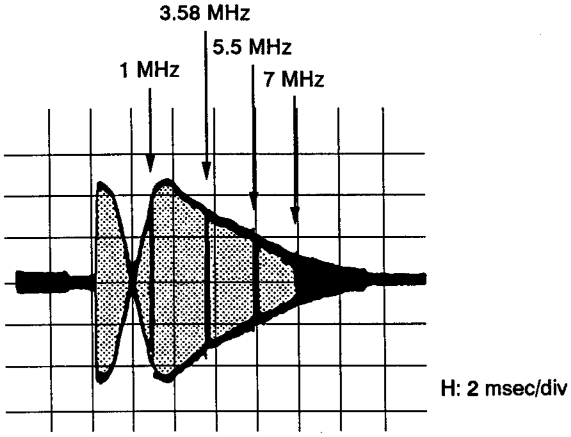


Fig. 9-6.

2. Flying Erase Check (VS-95 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of W001 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: approx. 7.5 MHz Voltage: Above 1.5 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

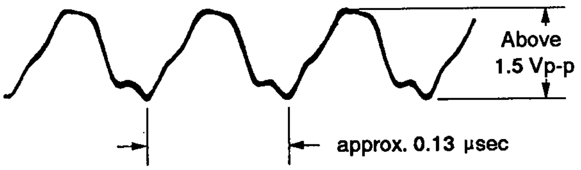


Fig. 9-7.

3. VXO Oscillation Frequency Check (VS-95 board)

Mode	STOP
Signal	Color bar
Measurement Point	Pin ⑫ of IC152
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 3579545 ± 70 Hz.

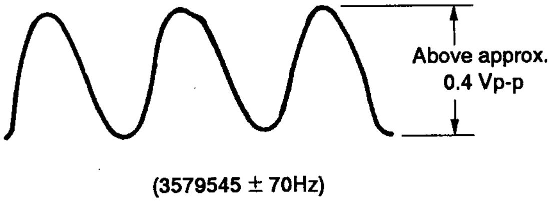


Fig. 9-8.

4. EE Level Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ② of CN101 (VIDEO OUT)[Note]
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (EE LEVEL)
Specified Value	A=1.00 ± 0.025V

Note: Terminate pin ② of CN101 at 75 Ω.
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

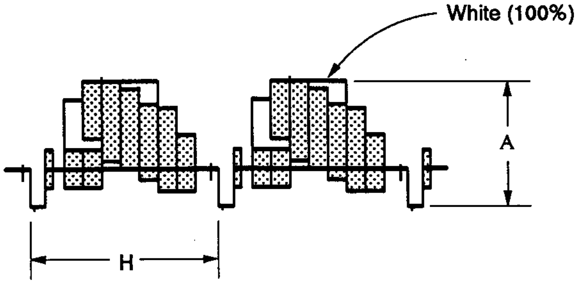


Fig. 9-9.

5. IR Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑦ of IC151 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 80 mVp-p)

Connection
1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin (51) of IC151 with a jumper wire.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

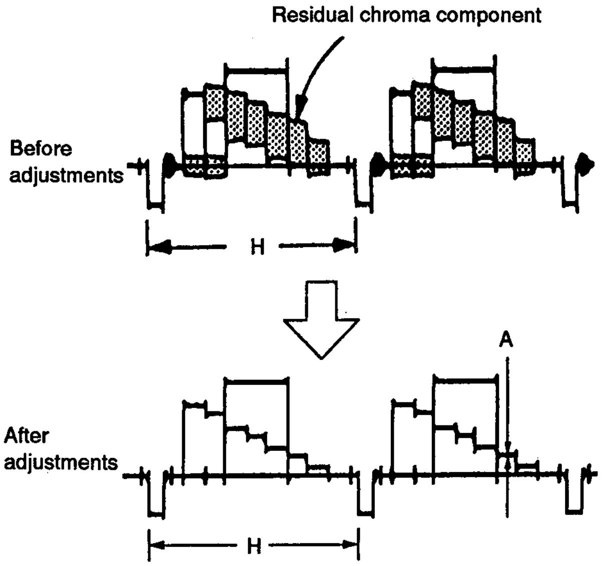


Fig. 9-10.

6. Y/C Separation Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑪ of IC151 (C+CD)
Adjusting Element	Oscilloscope
Measuring Instrument	RV051 (Phase)
Adjustment Page	D
Adjustment Address	4C (Y/C SEP DL LEVEL)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

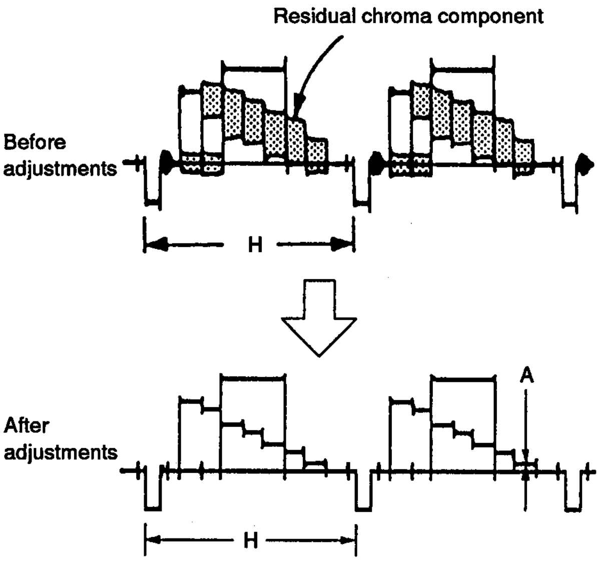


Fig. 9-11.

7. Emphasis Input Level Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar without burst signal
Measurement Point	Pin ③ of IC155 (or Pin ③ of IC151)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPHASIS INPUT LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

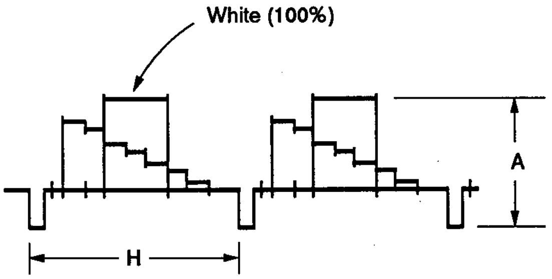


Fig. 9-12.

8. PB Y Level Adjustment (VS-95 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (NORMAL PB Y LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5NSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

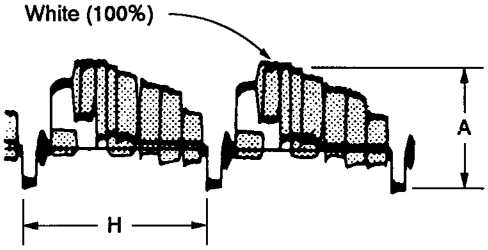


Fig. 9-13.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Video output terminal (terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

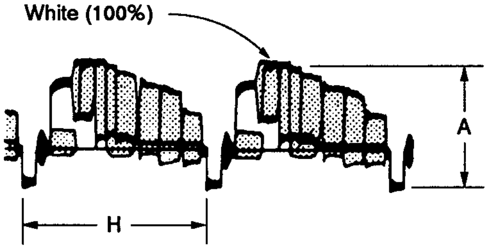


Fig. 9-14.

10. Y FM Carrier Frequency Adjustment (VS-95 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑤ of IC003 (REC Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (Y FM CARRIER)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

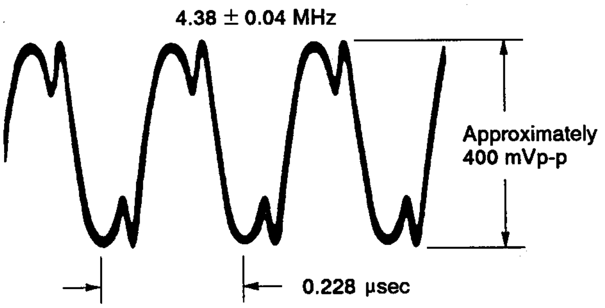


Fig. 9-15.

11. Deviation Adjustment (VS-95 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (Y FM DEVIATION)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote control unit.

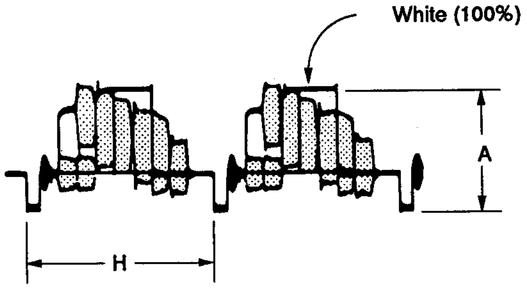


Fig. 9-16.

12. Chroma Emphasis f_0 Adjustment (VS-95 board)

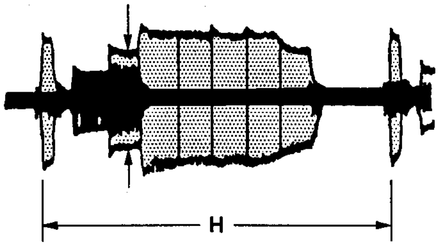
Mode	E-E
Signal	Color bar
Measurement Point	Pin ㉔ of IC152
Measuring Instrument	Oscilloscope
Adjustment Element	FL153
Specified Value	Minimum f_0 component

Connection:

1) Connect pin ㉔ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.



Minimize the amplitude of the latter section of the yellow section.

Fig. 9-17.

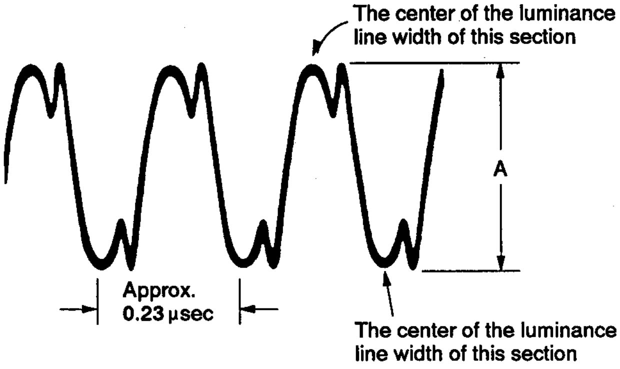
13. REC Y Level Adjustment (VS-95 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑤ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y LEVEL EE NOR MP) 54 (REC Y LEVEL EE NOR ME)
Specified Value	A=225 ± 5 mVp-p

Note: Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.



The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 9-18.

14. REC C Level Adjustment (VS-95 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ③ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF (EE))
Specified Value	A=120 ± 10 mVp-p

Note: Use a MP type tape.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

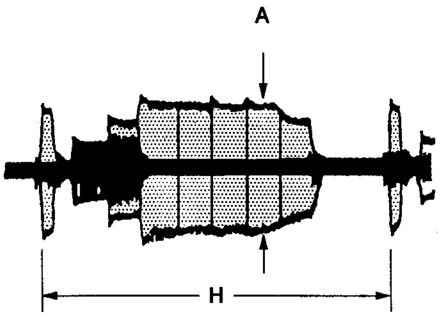


Fig. 9-19.

15. REC ATF Level Check (VS-95 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=8 ± 2 mVp-p

Note: Use a MP type tape.

Connection:
1) Remove the AU-138 board CN602.

Checking method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

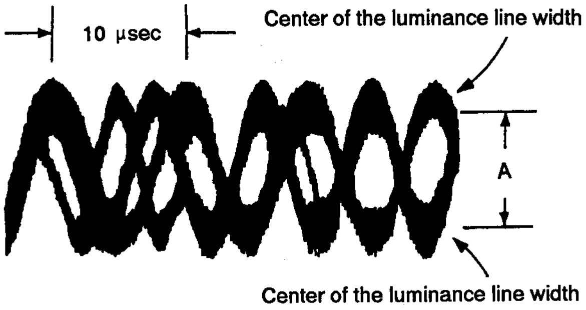


Fig. 9-20.

16. REC AFM Level Check (VS-95 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=9 ± 2 mVp-p

Note: Use a MP type tape.

Connection:

1) Connect Pin ⑨ of IC404 and GND with a 0.01 μF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

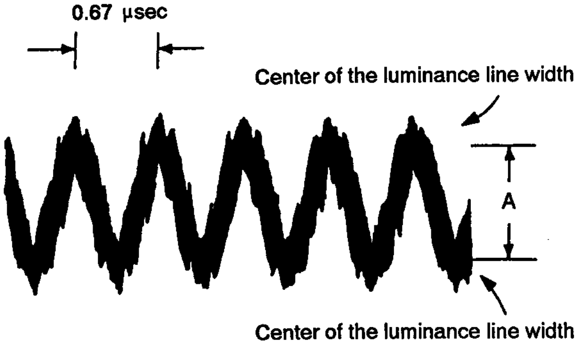
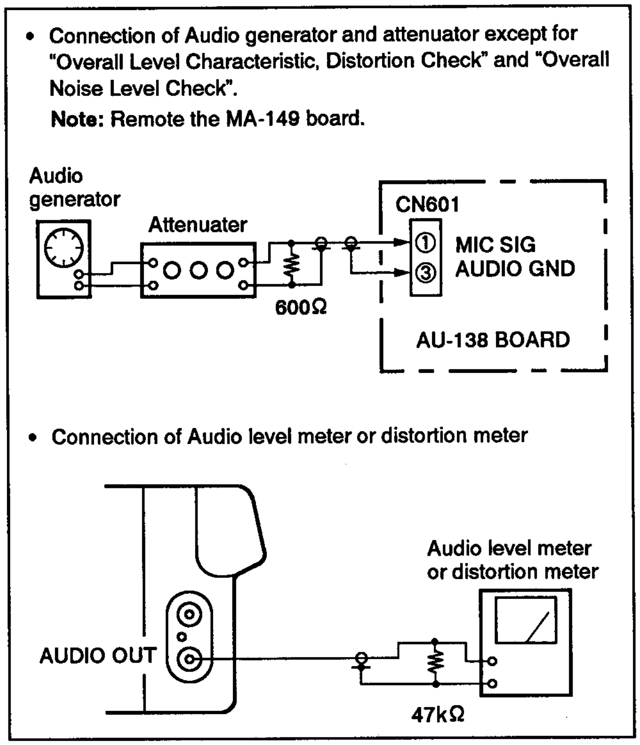

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 9-21.

9-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.



- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".
  Note: Remote the MA-149 board.

Audio generator
Attenuater
600Ω
CN601
① MIC SIG
③ AUDIO GND
AU-138 BOARD

- Connection of Audio level meter or distortion meter

Audio level meter or distortion meter
AUDIO OUT
47kΩ

Fig. 9-22.

[Adjustment Procedure]

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Recording level check
6) Overall level characteristics, distortion check
7) Overall noise level check

1. E-E Output Level Check (AU-138 board)

Mode	Record
Signal	400 Hz, –36.1 dBs, pin ① of CN601
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment (AU-138 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP)
Measurement Point	+: Pin ⑥ of IC601 –: Pin ㊹ of IC601 (C629 ⊕)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
3) Press the PAUSE button of the adjusting remote control unit.

3. Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5NSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

4. Carrier Frequency Check (AU-138 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Record Level Check (AU-138 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=48 ± 8 mVp-p

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

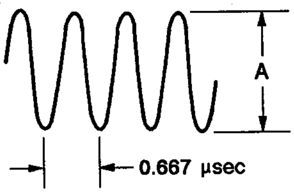


Fig. 9-23.

6. Overall Level Characteristic, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –66 dBs: Ext mic jack
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2 dBs Distortion rate: Below 0.5% (Note 1)

Note: 1) Value when the following filter is used

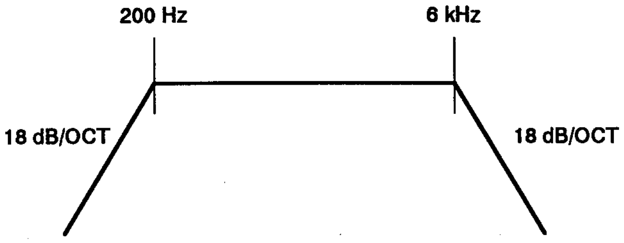


Fig. 9-24.

Checking method:

1) Input the 400 Hz, –66 dBs signal to the ext mic jack.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2 dBs, and that the distortion rate is below 0.5% (Note 1).

7. Overall Noise Level Check

Mode	Self recording
Signal	No signal: Ext mic jack
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –55.0 dBs

Checking method:

1) Insert the shorting plug to the ext mic jack.
2) Record.
3) Playback the recorded section.
4) Check that the noise level of the audio output terminal is below –55.0 dBs.

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Personal Video Group

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CCD-TR31/TR303/TR303PK

RMT-507

SONY

SERVICE MANUAL

US Model

Canadian Model

CCD-TR31

E Model

CCD-TR303/TR303PK

SUPPLEMENT-1

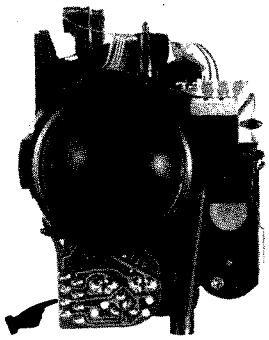
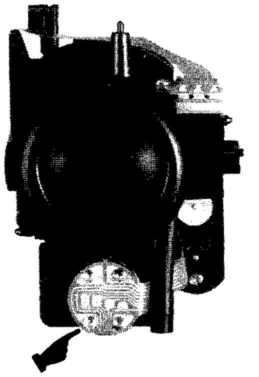
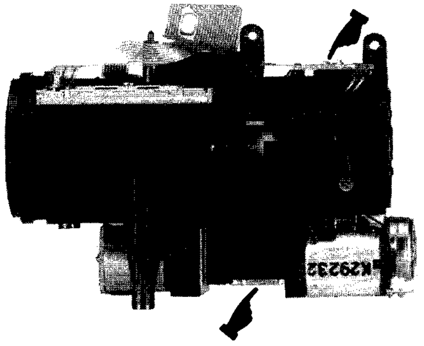
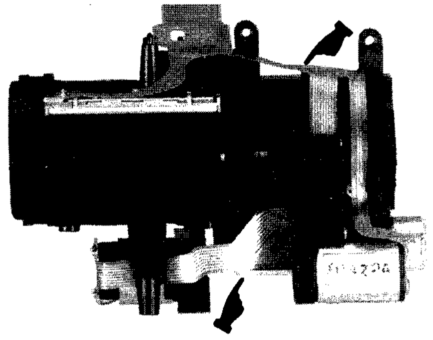
File this supplement with the Service Manual.

Subject: ZOOM LENS (TYPE B) ASSEMBLY Addition

- The B type lens (VCL-6210WF) has been added to the present A type lens (VCL-6210WC). Take note that although these lens are interchangeable, their components are not.

Differentiating the lens

☛ : Changed portion

TYPE A (VCL-6210WC)	TYPE B (VCL-6210WF)
From the front of the lens 	From the front of the lens 
From the right side of the lens (as seen from the front) 	From the right side of the lens (as seen from the front) 

MICROFILM

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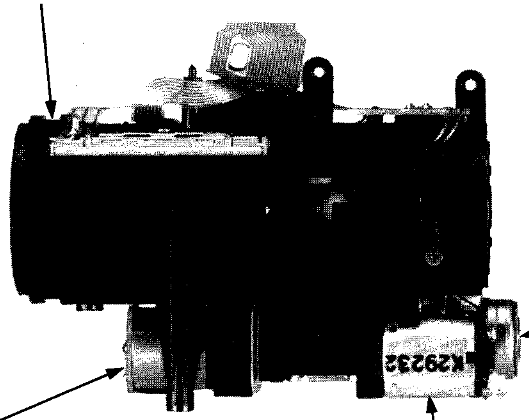
2-14. INTERNAL VIEWS

— Right side —

TYPE A

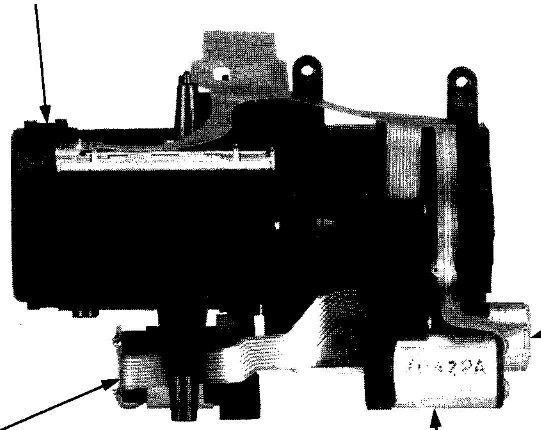

Zoom lens (VCL-6210WC)
1-547-548-11

M905
Focus motor assembly
3-708-491-01

M904
IRIS meter assembly
3-708-494-01

M906
Zoom motor assembly
3-708-492-01

TYPE B


Zoom lens (VCL-6210WF)
1-547-630-11

M905
Focus motor assembly
3-708-656-01

M904
IRIS meter assembly
3-708-653-01

M906
Zoom motor assembly
3-708-654-01

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5-3. MAIN BOARDS ASSEMBLY

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MISCELLANEOUS

FORMER			NEW		
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
118	1-547-548-11	LENS, ZOOM (VCL-6210WC)	118	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)
			118	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)

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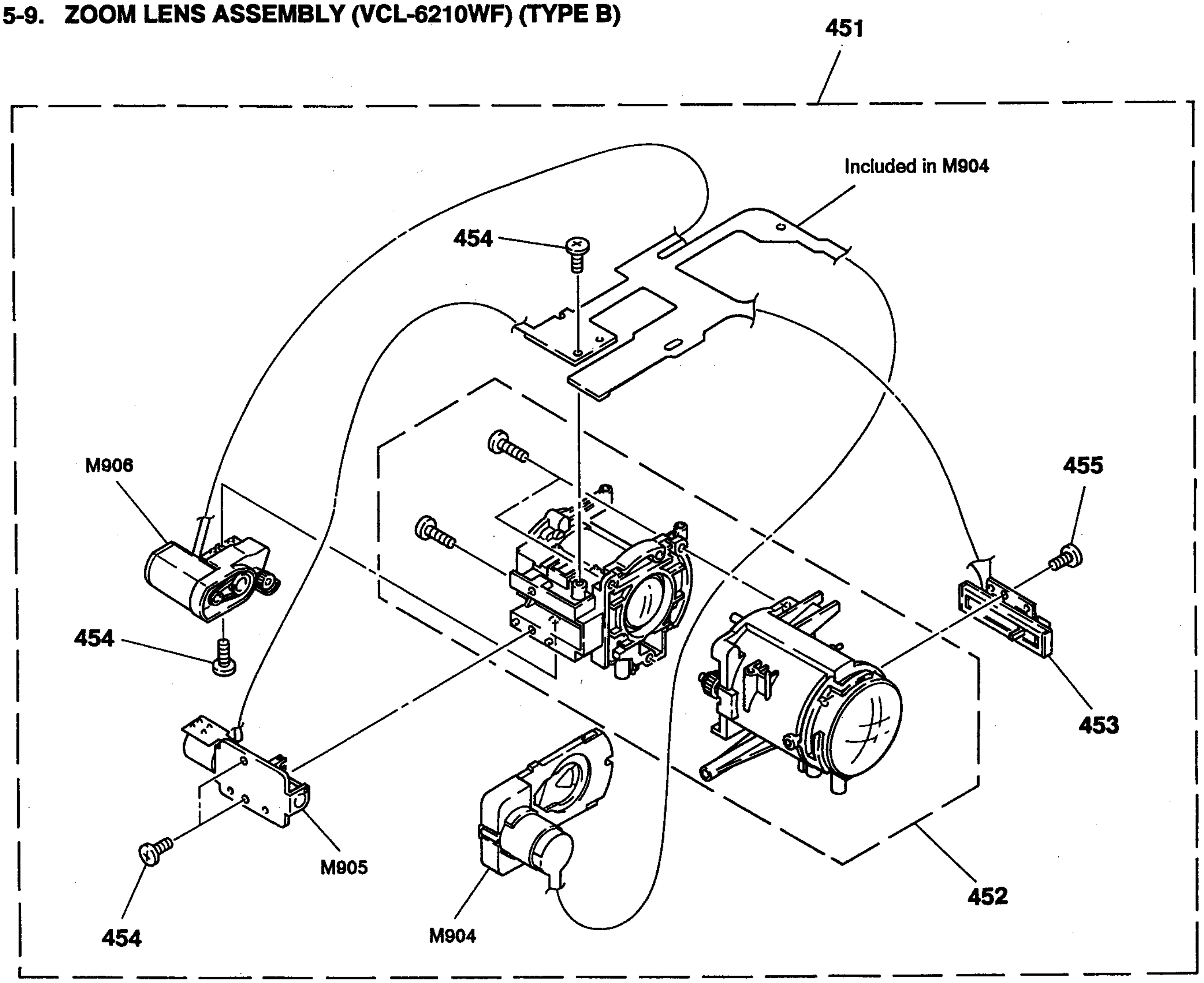
5-9. ZOOM LENS ASSEMBLY (VCL-6210WF) (TYPE B)



Ref. No.	Part No.	Description	Remark
451	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
452	3-708-652-01	LENS ASSY	
453	3-708-655-01	POTENTIO, ZOOM	
454	3-708-302-01	SCREW, FITTING M.E	
455	3-707-657-01	SCREW, POTENTIOMETER FITTING	
M904	3-708-653-01	IRIS UNIT (TYPE B)	
M905	3-708-656-01	MOTOR UNIT, FOCUS (TYPE B)	
M906	3-708-654-01	MOTOR UNIT, ZOOM (TYPE B)	

CORRECTION

☛ : Corrected portion

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3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-417R/424R/434R)

Pin No.	Signal	I/O	Function
1	ZOOM M REV	O	Zoom motor control signal. Normally "H". 15.7 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE. ☛
2	ZOOM M FWD	O	Zoom motor control signal. Normally "H". 15.7 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE. ☛

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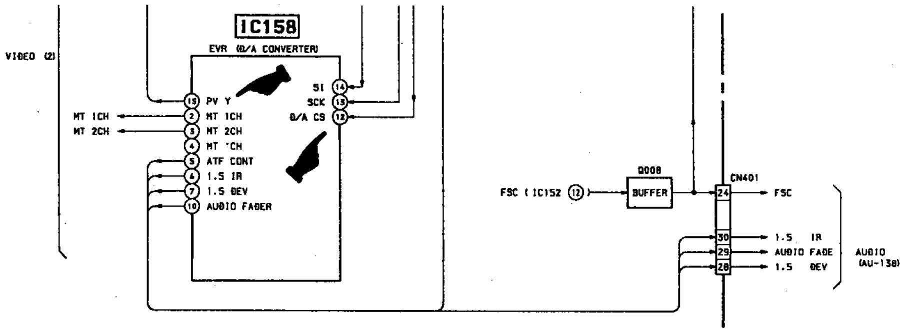
3-6. VIDEO (1) BLOCK DIAGRAM


IC158
EVR (D/A CONVERTER)
VIDEO (2)
PV Y
MT 1CH
MT 2CH
MT 'CH
ATF CONT
1.5 IR
1.5 DEV
AUDIO FADER
SI
SCK
D/A CS
FSC (IC152 ⑫)
Q008
BUFFER
CN401
FSC
1.5 IR
AUDIO FADE
1.5 DEV
AUDIO (AU-138)

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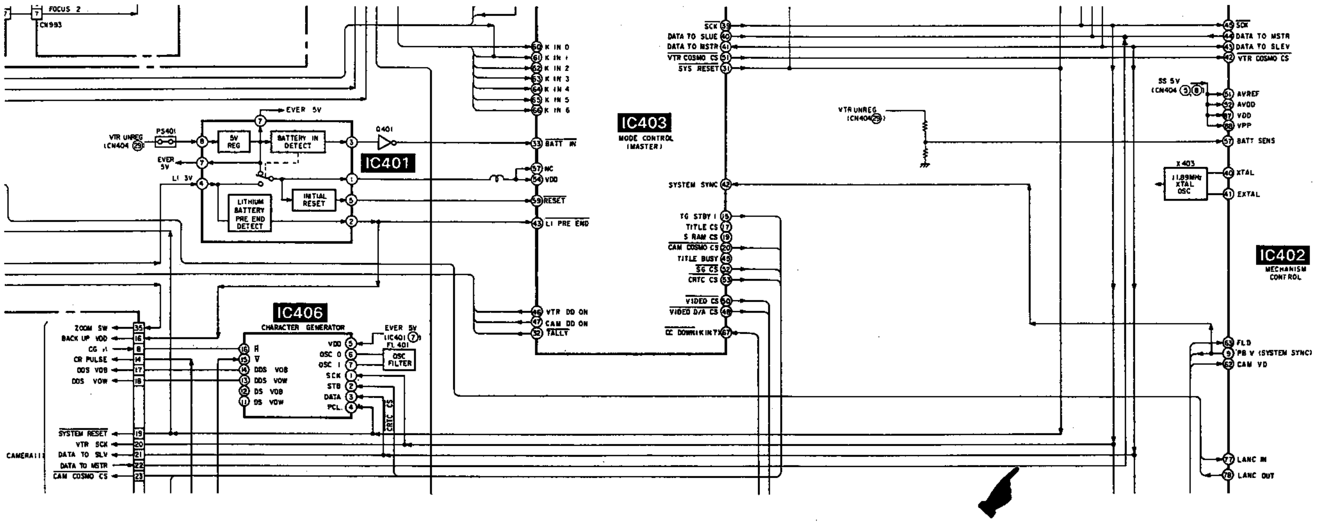
3-9. SYSTEM CONTROL BLOCK DIAGRAM


FOCUS 2
CK993
IC403
MODE CONTROL (MASTER)
IC401
IC406
CHARACTER GENERATOR
IC402
MECHANISM CONTROL
EVER 5V
5V REG
BATTERY IN DETECT
LITHIUM BATTERY PRE END DETECT
INITIAL RESET
VTR UNREG
PS401
Q401
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
BATT IN
NC
VDD
RESET
LI PRE END
VTR DD ON
CAM DD ON
TALLY
SCK
DATA TO SLVE
DATA TO MSTR
VTR COSMO CS
SYS RESET
SYSTEM SYNC
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
CRTC CS
VIDEO CS
VIDEO D/A CS
ZOOM SW
BACK UP VDD
CR PULSE
DDS VDB
DDS VOW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSMO CS
CAMERA
OSC FILTER
AVREF
AVDD
VDD
VPP
BATT SENS
X403
11.89MHz XTAL OSC
XTAL
EXTAL
FLD
PB V (SYSTEM SYNC)
CAM VD
LANC IN
LANC OUT

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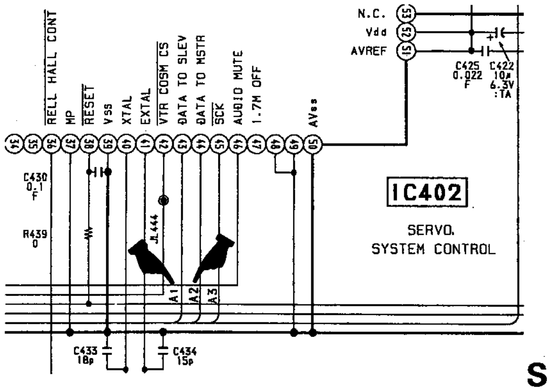
VS-95 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM


N.C.
Vdd
AVREF
C425 0.022 F
C422 10μ 6.3V :TA
RELL HALL CONT
MP
RESET
VSS
XTAL
EXTAL
VTR COSM CS
DATA TO SLEV
DATA TO MSTR
SCK
AUDIO MUTE
1.7H OFF
AVss
C430 0.1 F
R439 0
L444
A1
A2
A3
IC402
SERVO. SYSTEM CONTROL
C433 18p
C434 15p

9-973-267-81

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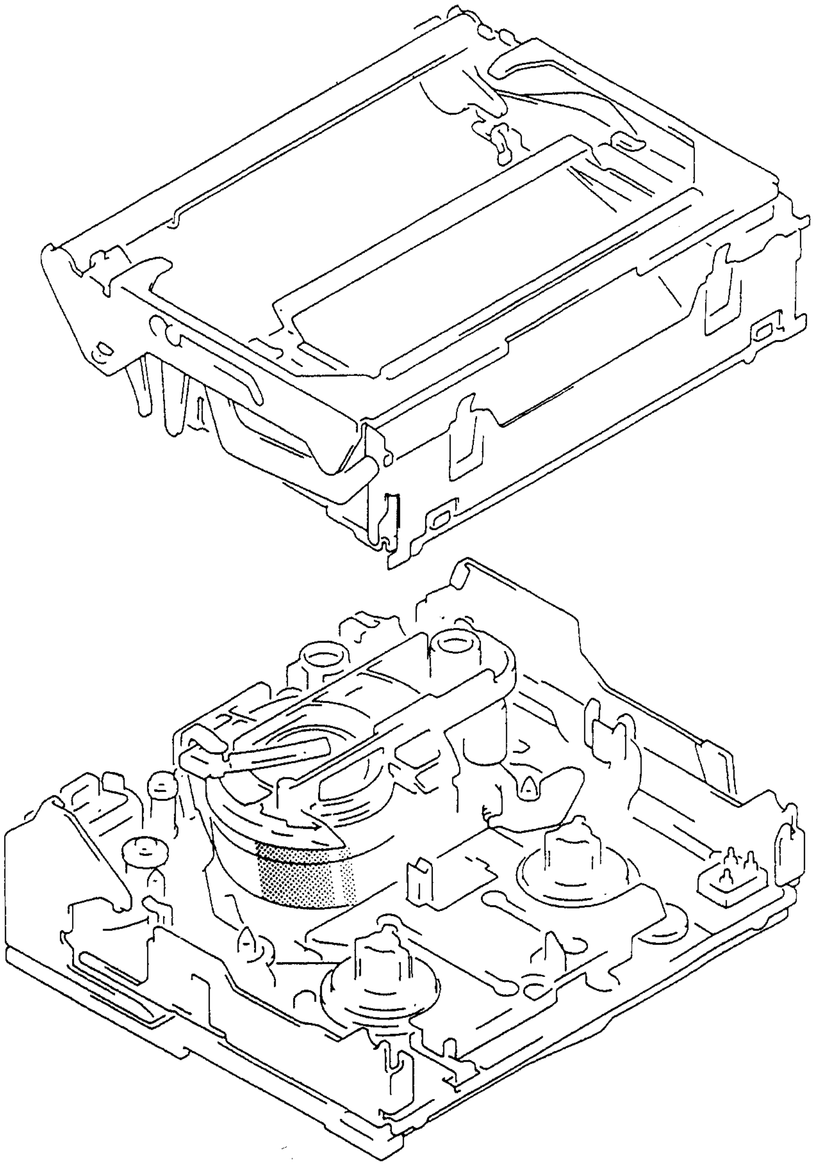
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm **1** toward the arrow 🅐 to unlock from lock guide **2**, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws **3** and remove the LS frame **4** toward the arrow 🅑.
4) With the cassette compartment assembly **5** pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly **5** in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.

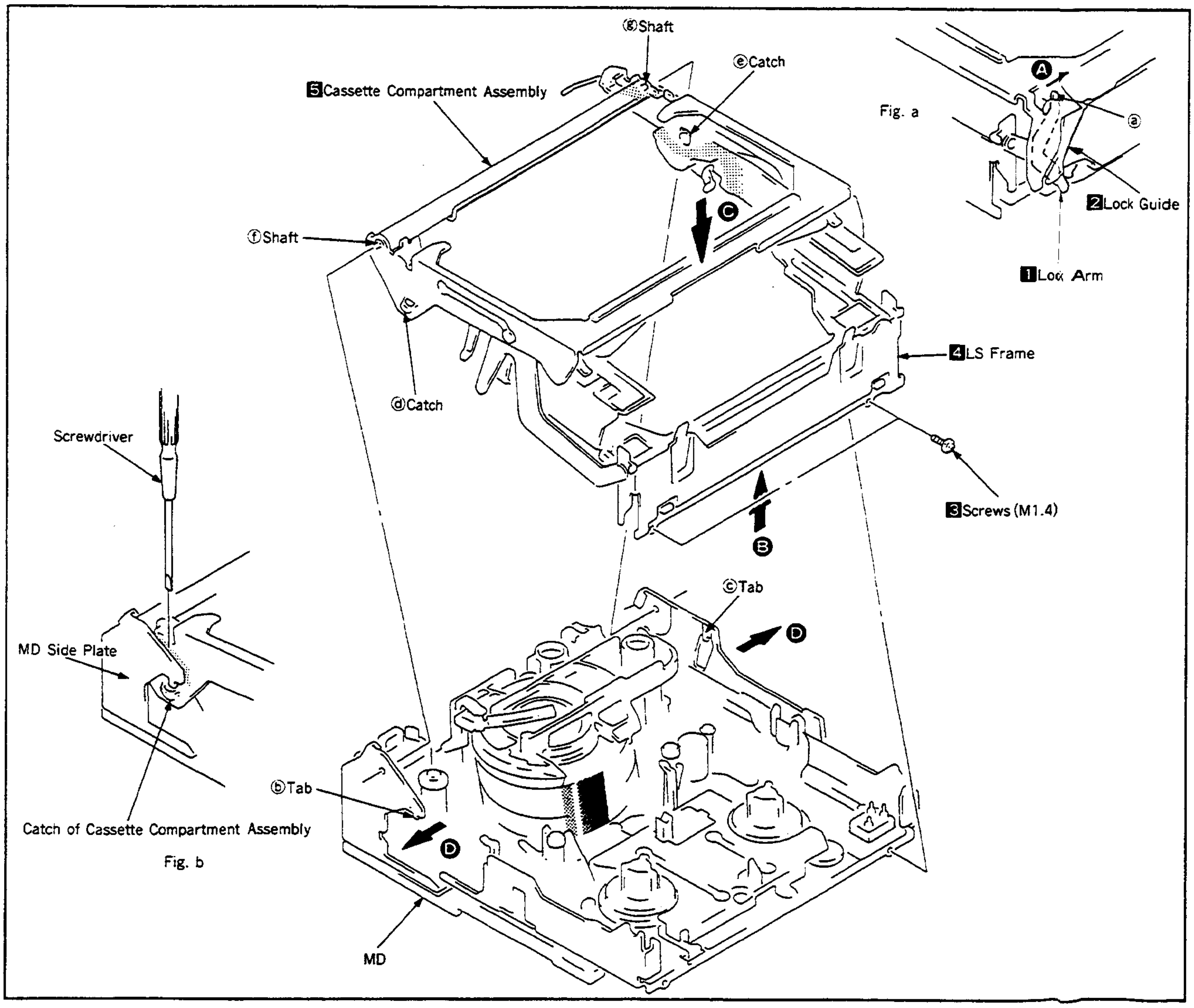

ⓖShaft
ⓔCatch
5Cassette Compartment Assembly
Fig. a
A
ⓐ
2Lock Guide
1Lock Arm
ⓕShaft
C
4LS Frame
ⓓCatch
Screwdriver
3Screws (M1.4)
B
ⓒTab
D
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
D
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

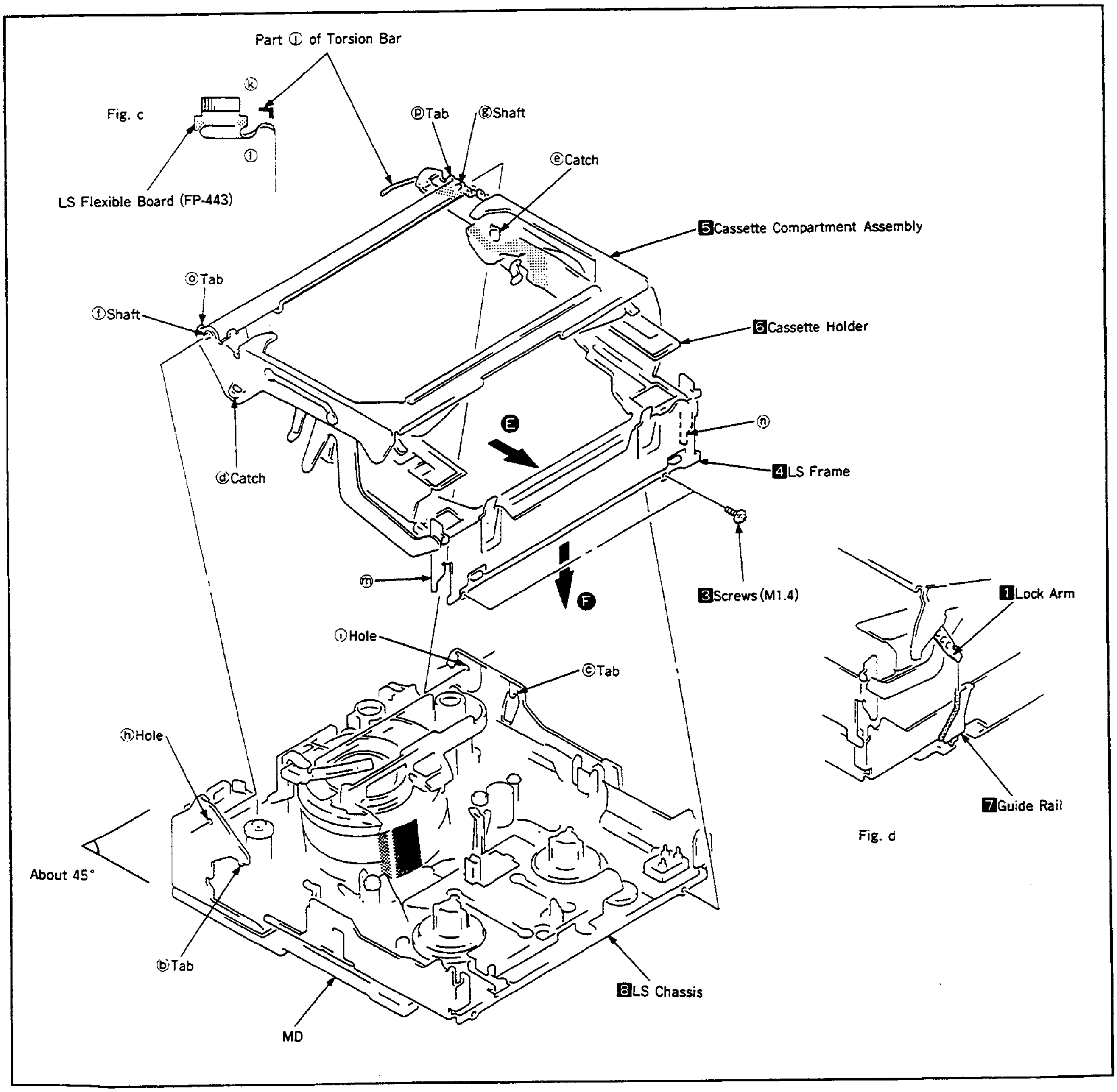

Part ⓙ of Torsion Bar
Fig. c
ⓚ
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
🅔
ⓝ
ⓓCatch
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
About 45°
ⓑTab
❽LS Chassis
MD
❼Guide Rail
Fig. d

Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap ❷ on the Reflector C ❶.
3) Press the pin of the push switch ❸ (ON state) and fix it with adhesive tape ❹ in that state.

Note : Press the asterisked (∗) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch ❺ in an arrow direction as shown in Fig. a.

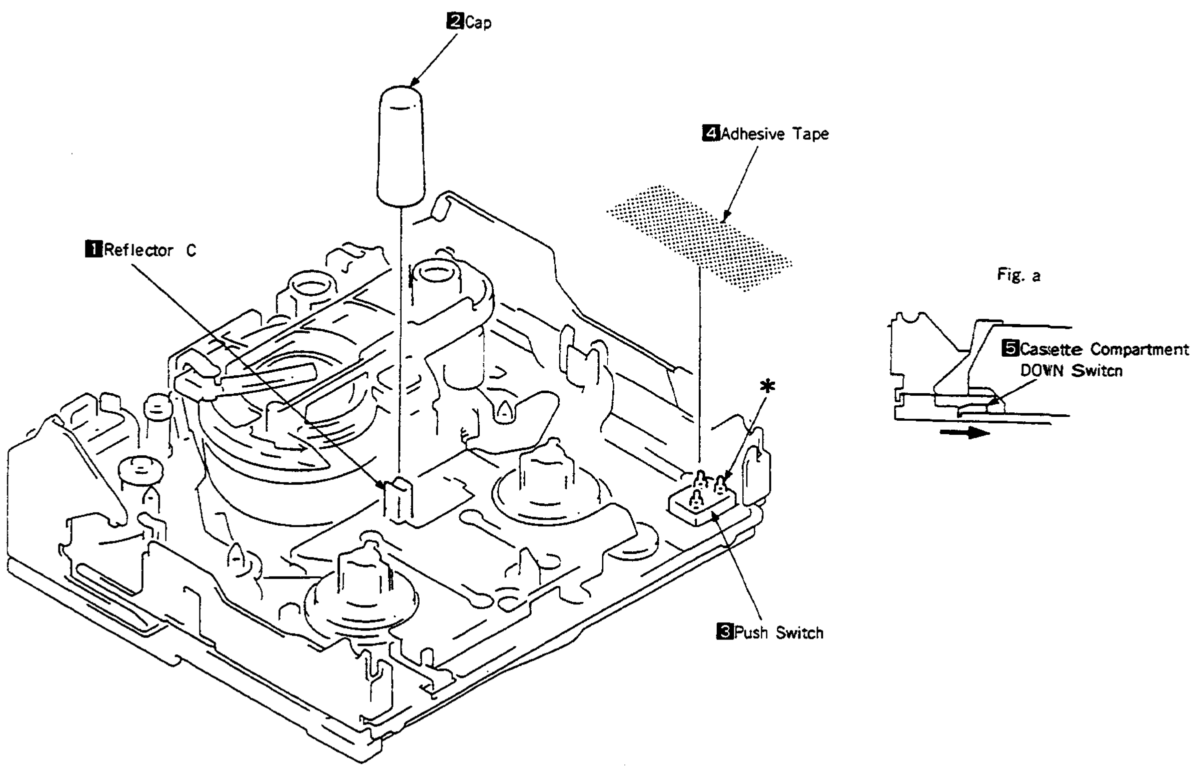

❷Cap
❹Adhesive Tape
❶Reflector C
Fig. a
❺Cassette Compartment DOWN Switch
∗
❸Push Switch

Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector. U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

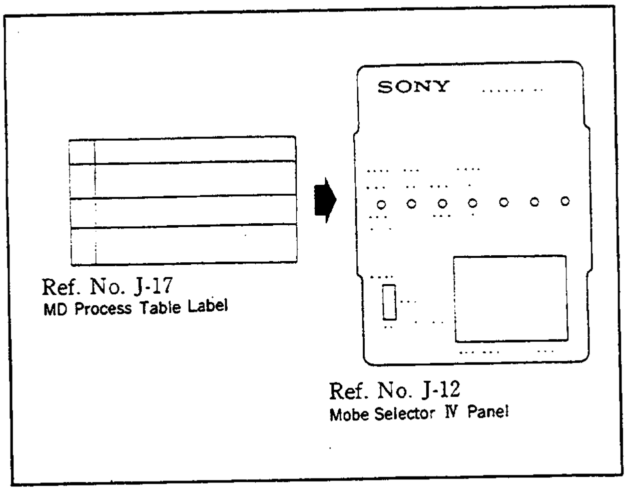

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector Ⅳ Panel

Fig. 4

1 Construction (Fig.5)

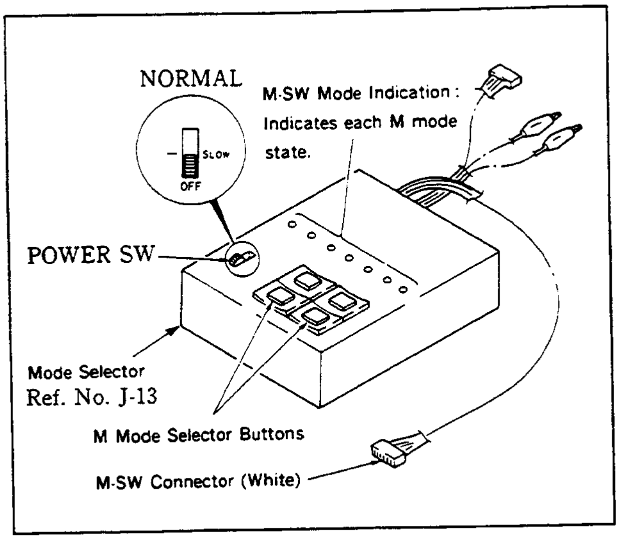

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

For CCD-FX410 series

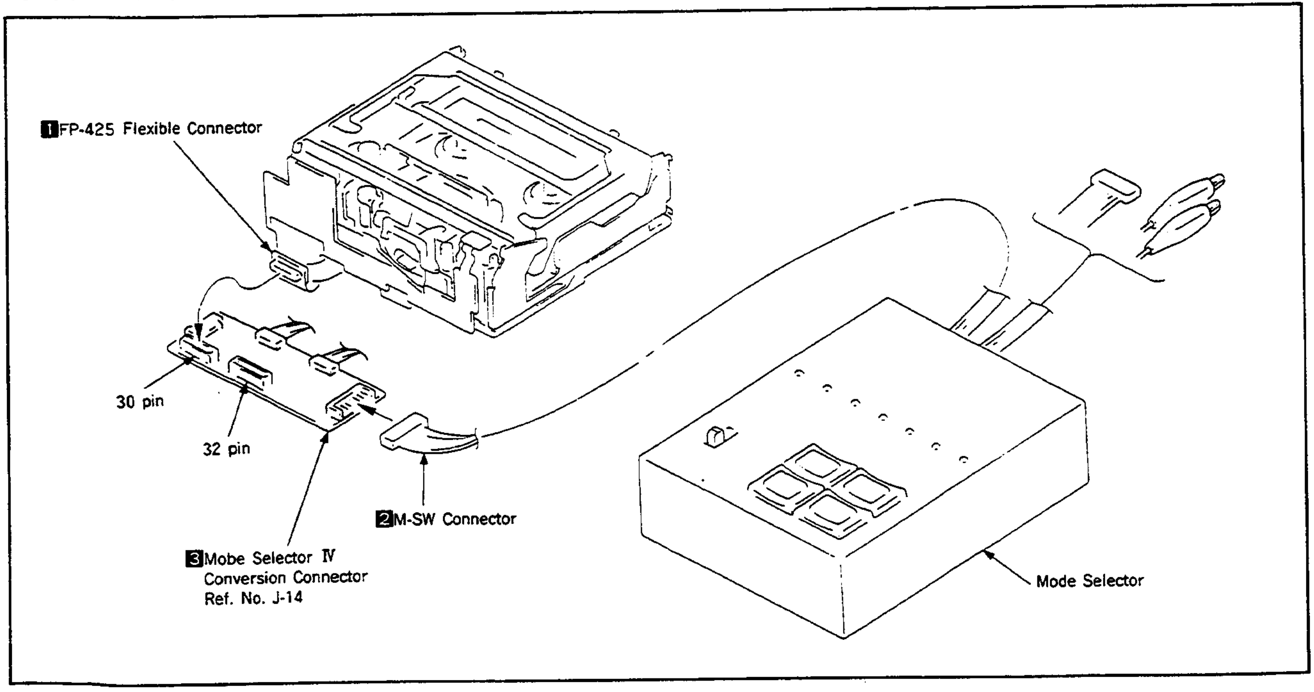
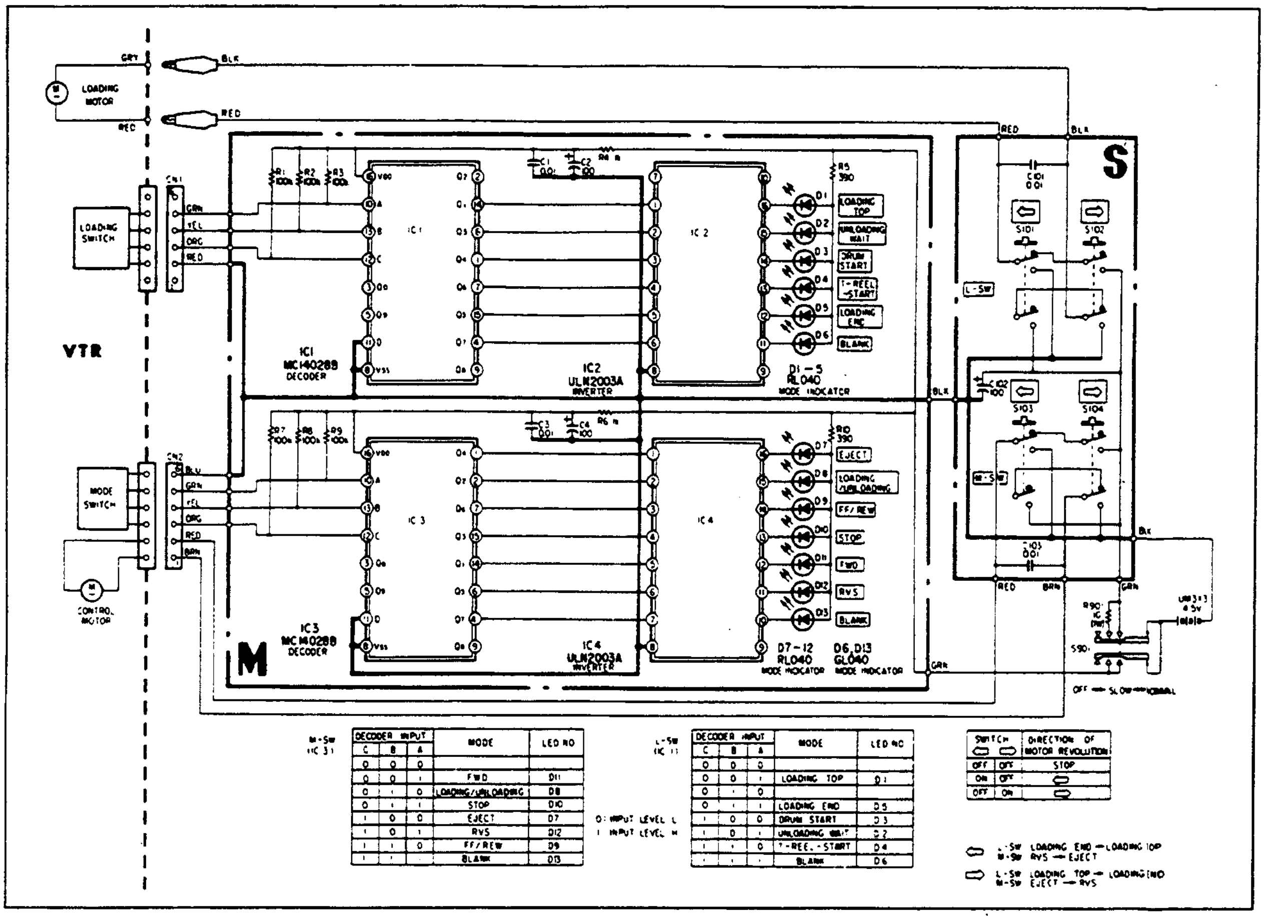

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector Ⅳ Conversion Connector Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM


LOADING MOTOR
GRY
BLK
RED
VTR
LOADING SWITCH
CN1
GRN
YEL
ORG
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 0.01
C2 100
R4 1k
R5 390
IC1
MC14028B
DECODER
IC2
ULN2003A
INVERTER
D1
D2
D3
D4
D5
D6
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
D1-5
RL040
MODE INDICATOR
R7 100k
R8 100k
R9 100k
C3 0.01
C4 100
R6 1k
R10 390
IC3
MC14028B
DECODER
IC4
ULN2003A
INVERTER
D7
D8
D9
D10
D11
D12
D13
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
D7-12
RL040
MODE INDICATOR
D6, D13
GL040
MODE INDICATOR
S
M
C101 0.01
C102 100
C103 0.01
S101
S102
S103
S104
L-SW
M-SW
R901
590
OFF — SLOW — NORMAL

M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH ⇦	SWITCH ⇨	DIRECTION OF MOTOR REVOLUTION
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description		
		CAPACITOR		
C1	1-108-579-00	MILER	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MILER	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MILER	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MILER	0.01μF	50V
		DIODE		
D1	8-719-812-31	DIODE TLR123		
D2	8-719-812-31	DIODE TLR123		
D3	8-719-812-31	DIODE TLR123		
D4	8-719-812-31	DIODE TLR123		
D5	8-719-812-31	DIODE TLR123		
D6	8-719-812-33	DIODE TLG123A		
D7	8-719-812-31	DIODE TLR123		
D8	8-719-812-31	DIODE TLR123		
D9	8-719-812-31	DIODE TLR123		
D10	8-719-812-31	DIODE TLR123		
D11	8-719-812-31	DIODE TLR123		
D12	8-719-812-31	DIODE TLR123		
D13	8-719-812-33	DIODE TLG123A		

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

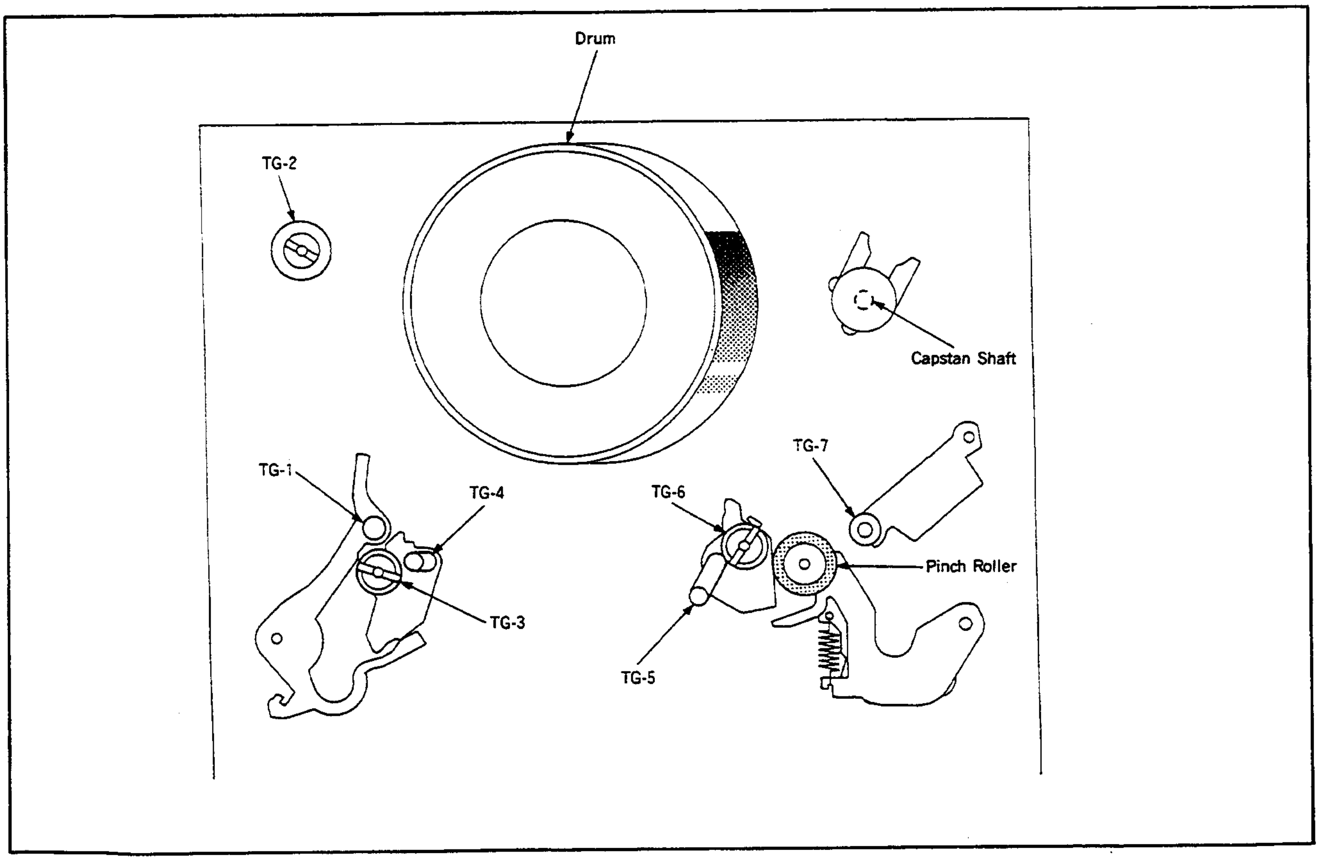


Fig. 7

2-3. PERILDIC CHECK ITEMS

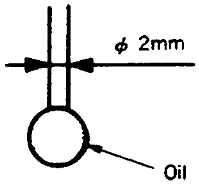
	Location of Maintenance and check	Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

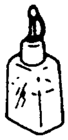
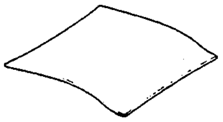
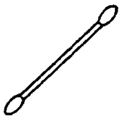
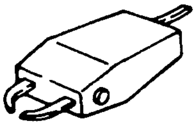
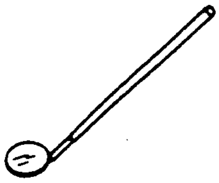
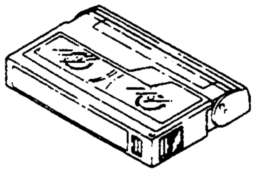
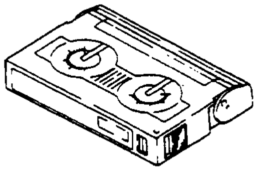
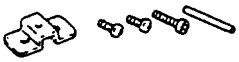
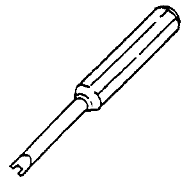
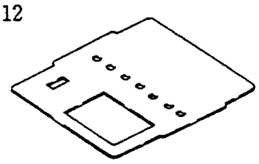
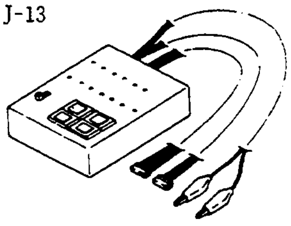
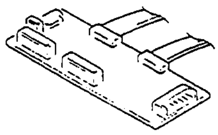
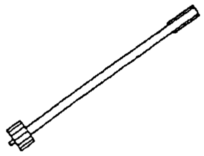
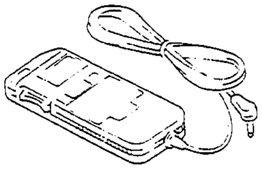
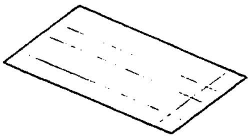
- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.



2-4. Service jigs list

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-9 	J-10  (Attached to the maintenance rotary upper drum)
J-11 	J-12 	J-13 	J-14 
J-15 	J-16 	J-17 	

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw 1.
3) Remove the Retainer, Gooseneck assembly 2.

2. Mounting

1) Mount the Retainer, Gooseneck assembly 2 with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw 1.
3) Referring to 1-1, mount the cassette compartment assembly.

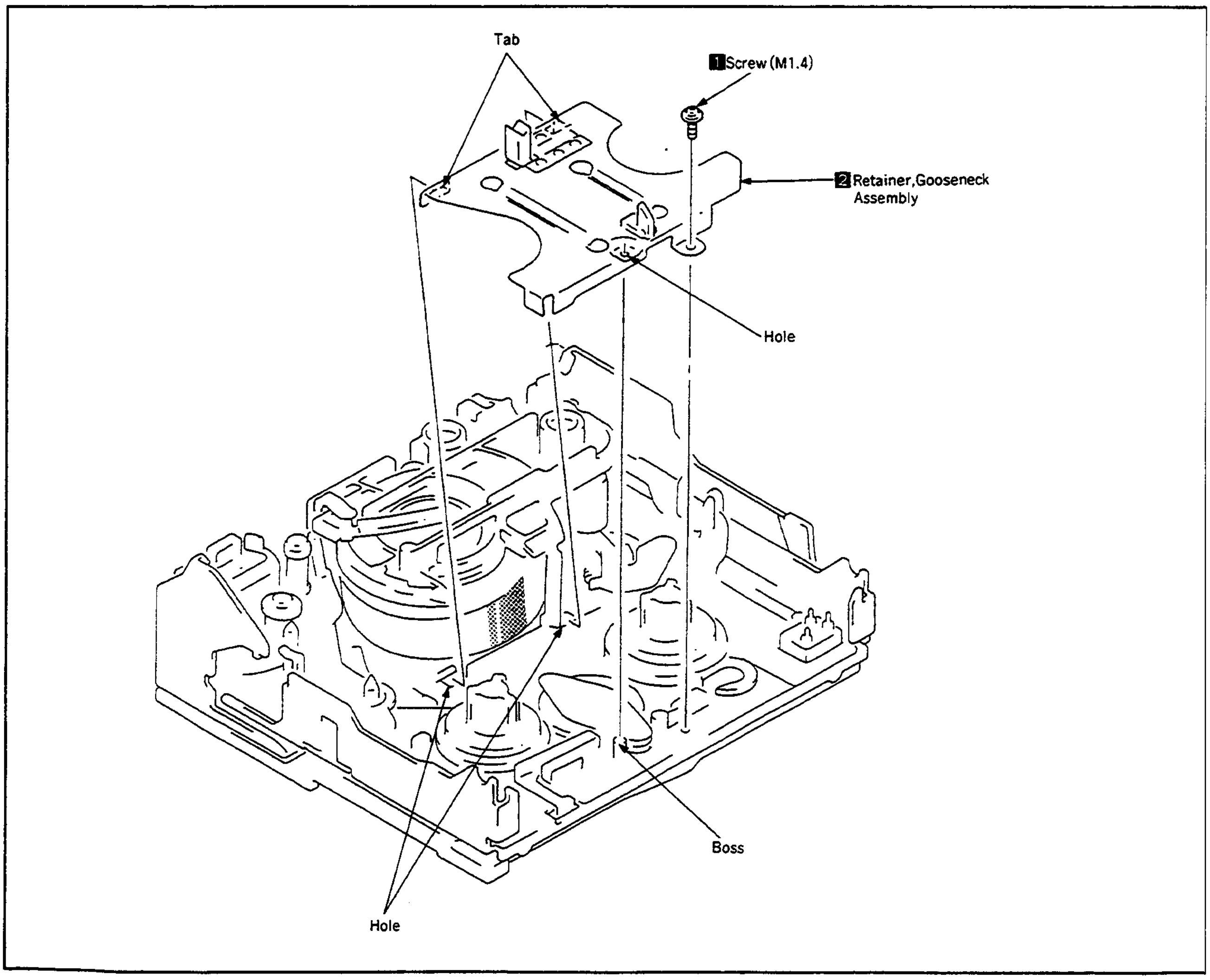


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

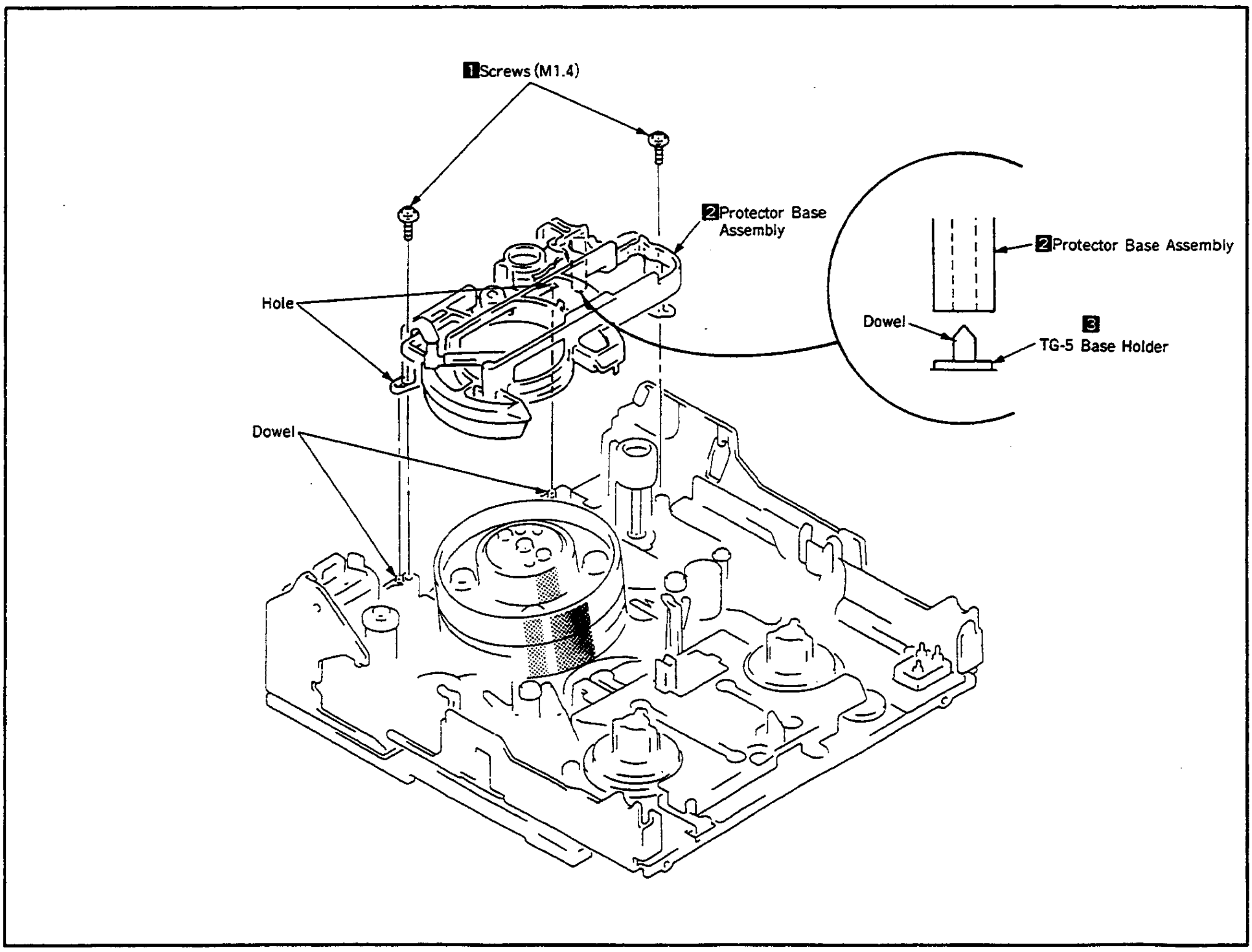

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸
TG-5 Base Holder

Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

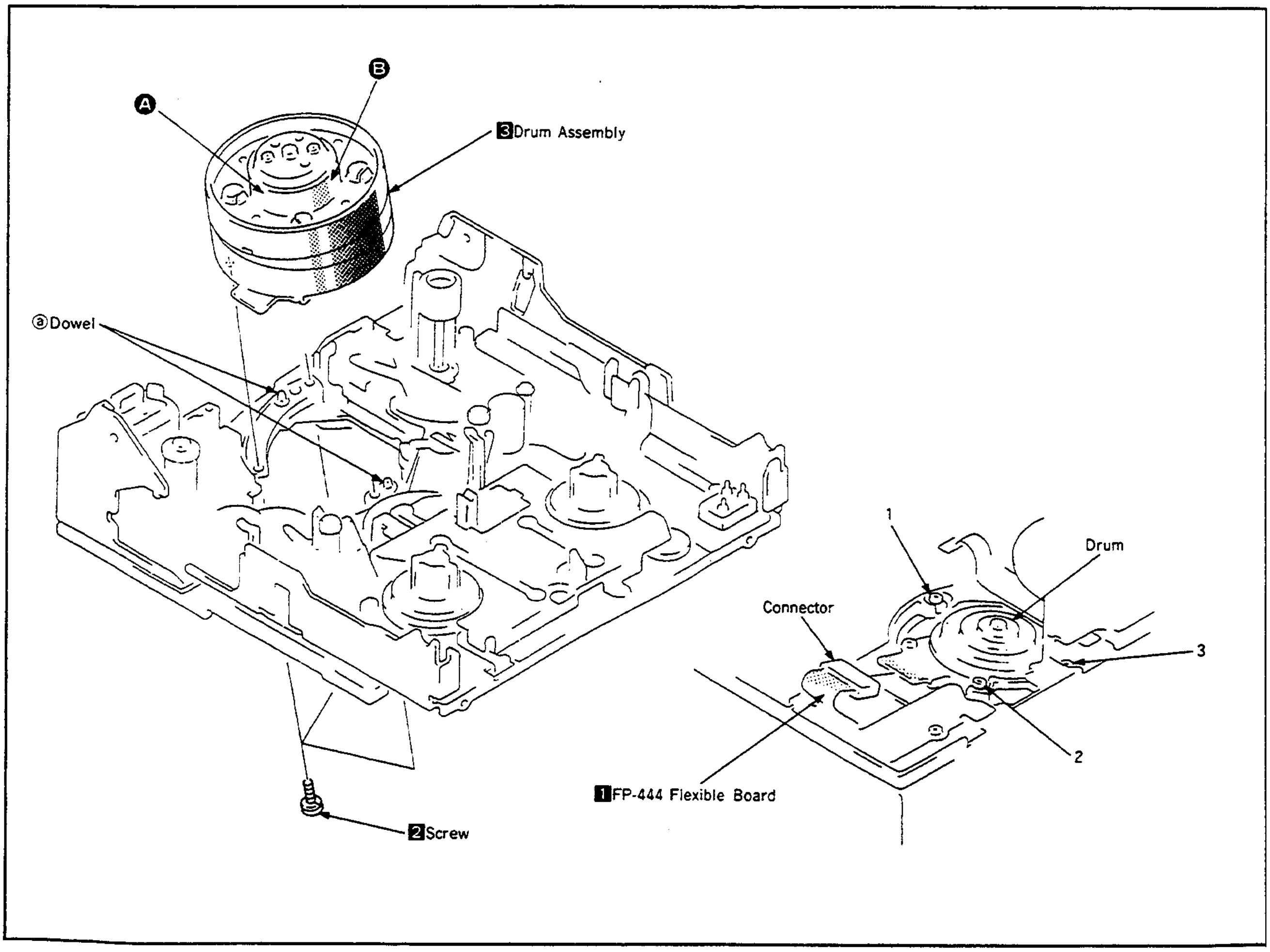


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

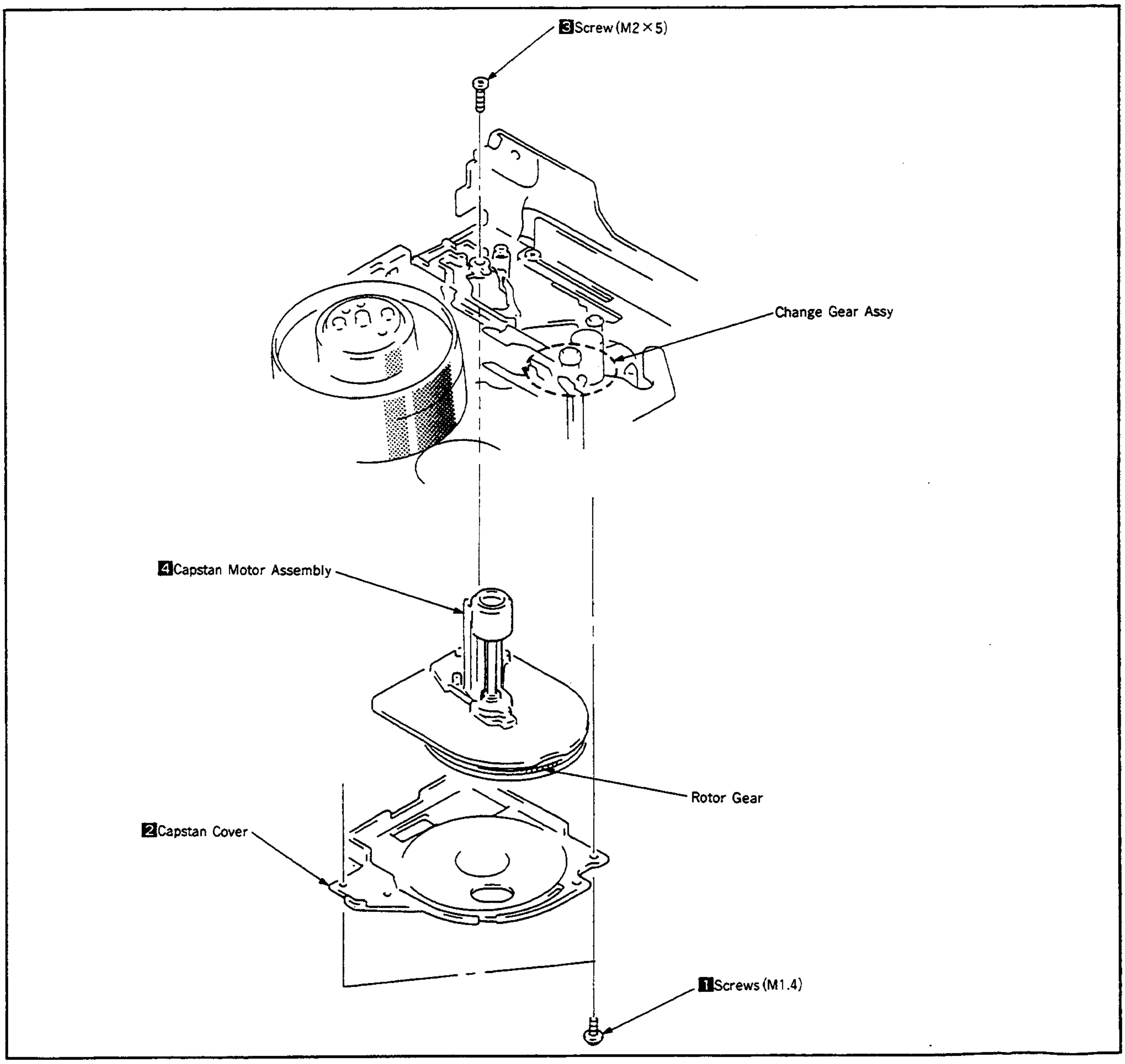

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly ❶.
4) Remove the T soft assembly ❷, then the T soft arm ❸.

2. Mounting

1) Mount the T soft arm ❸ with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly ❷ with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly ❶ and rotate it toward the arrow 🅐 to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

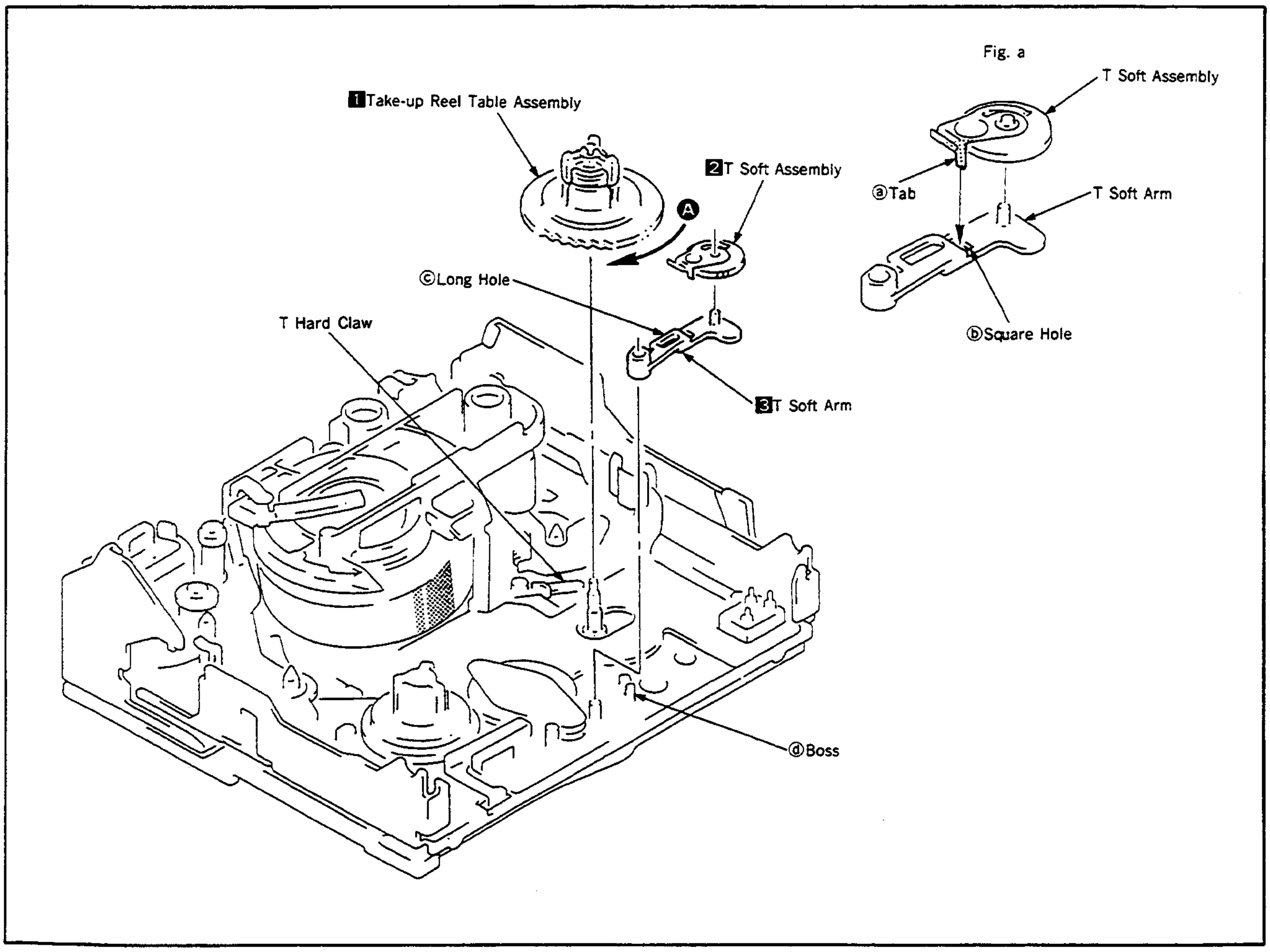

❶Take-up Reel Table Assembly
❷T Soft Assembly
🅐
ⓒLong Hole
T Hard Claw
❸T Soft Arm
ⓓBoss
Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole

Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the $\boxed{\text{READY}}$ mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

2. Mounting

1) Select the $\boxed{\text{READY}}$ mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

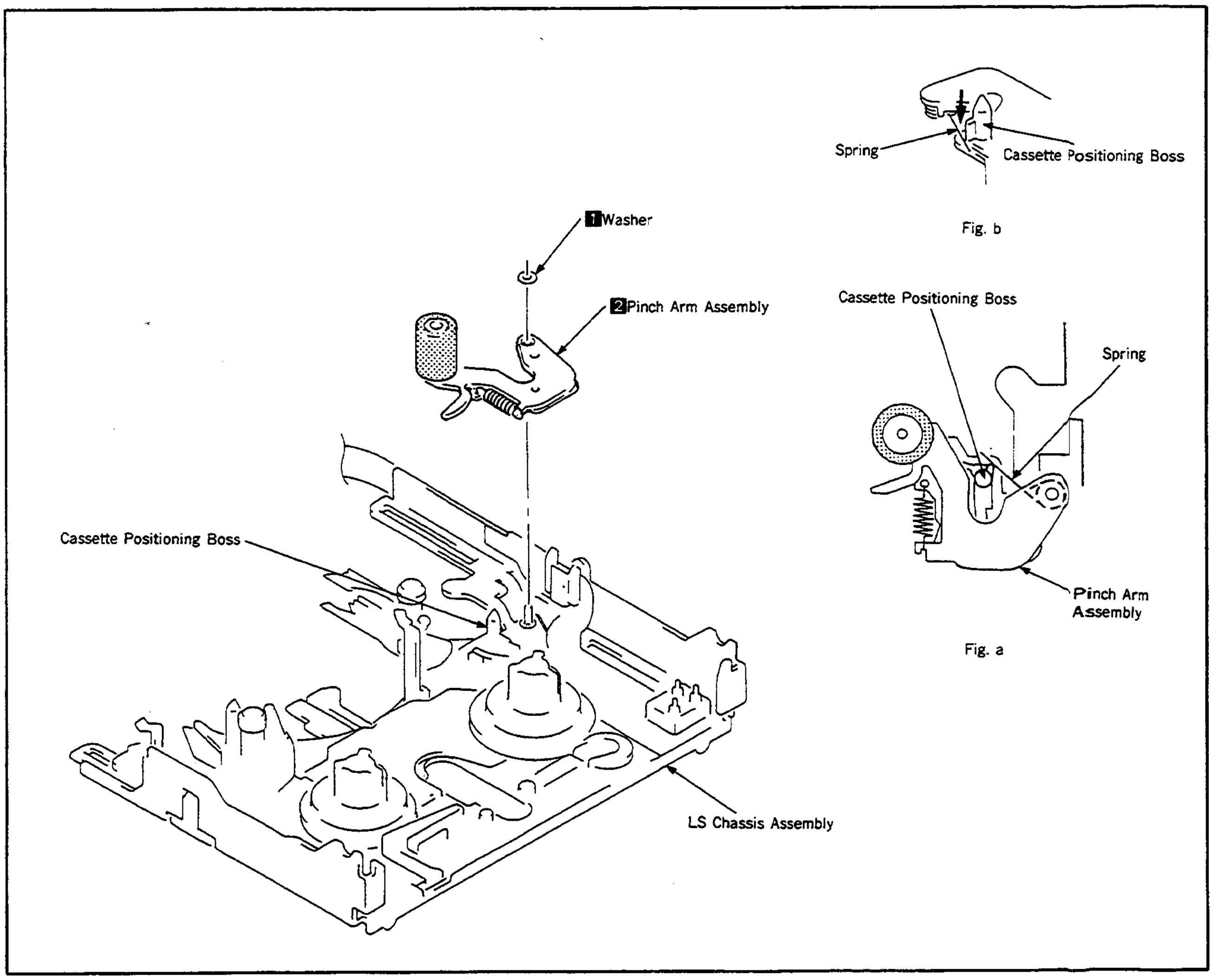

Spring
Cassette Positioning Boss
Fig. b
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Pinch Arm Assembly
Fig. a
Cassette Positioning Boss
LS Chassis Assembly

Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw ❶, TG-5 base holder ❷, and LS flexible board ❸.
5) Remove a lock washer ❹, then the gooseneck assembly ❺.
6) Remove four screws ❻, then the LS chassis assembly ❼.

2. Mounting

1) Select the $\boxed{\text{USE}}$ mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly ❼ on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws ❻.
6) Mount the LS flexible board ❸ and TG-5 base holder ❷,then tighten the screw ❶.
7) Mount the Gooseneck assembly ❺ and fix it with a washer ❹.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

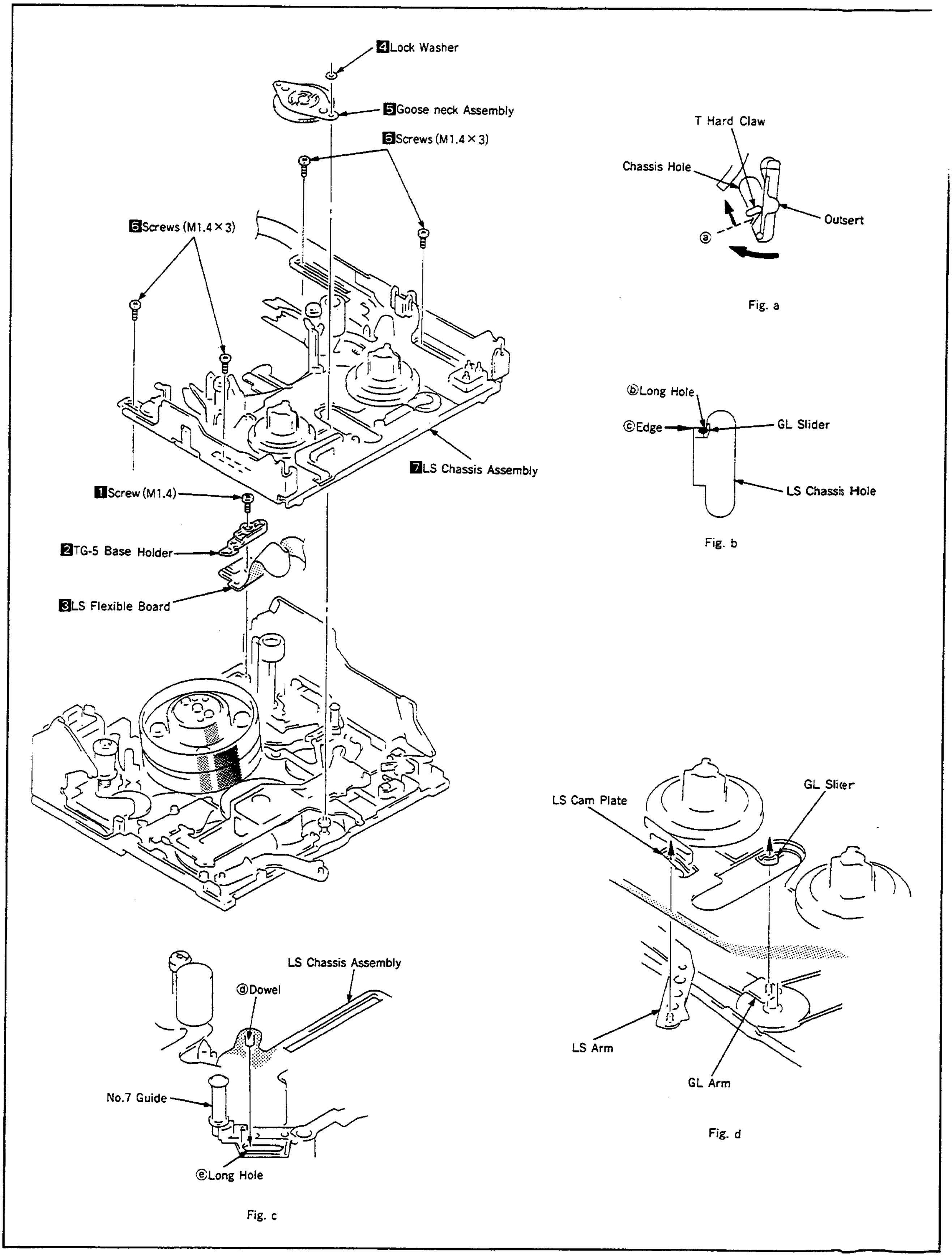

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4×3)
6 Screws (M1.4×3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑ Long Hole
ⓒ Edge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓ Dowel
No.7 Guide
ⓔ Long Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

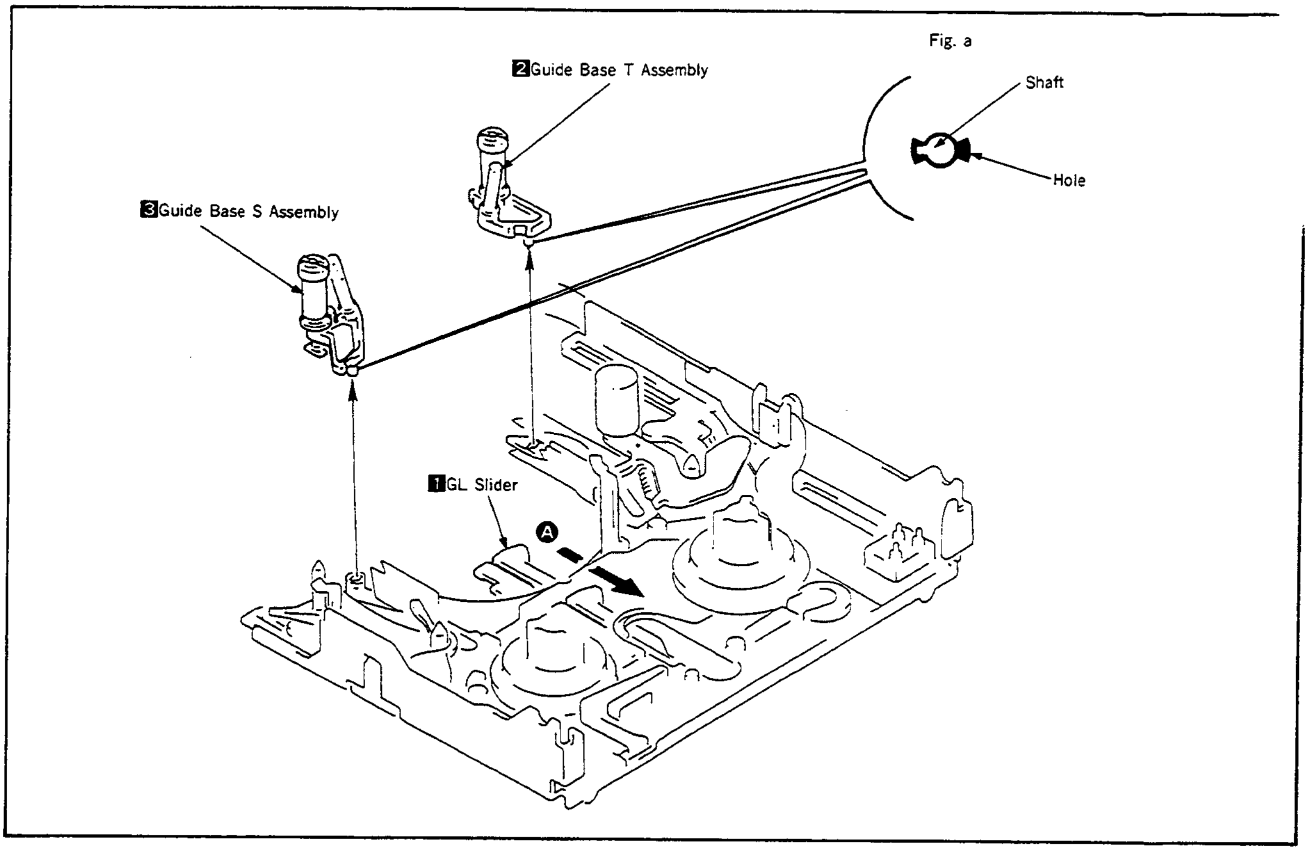


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

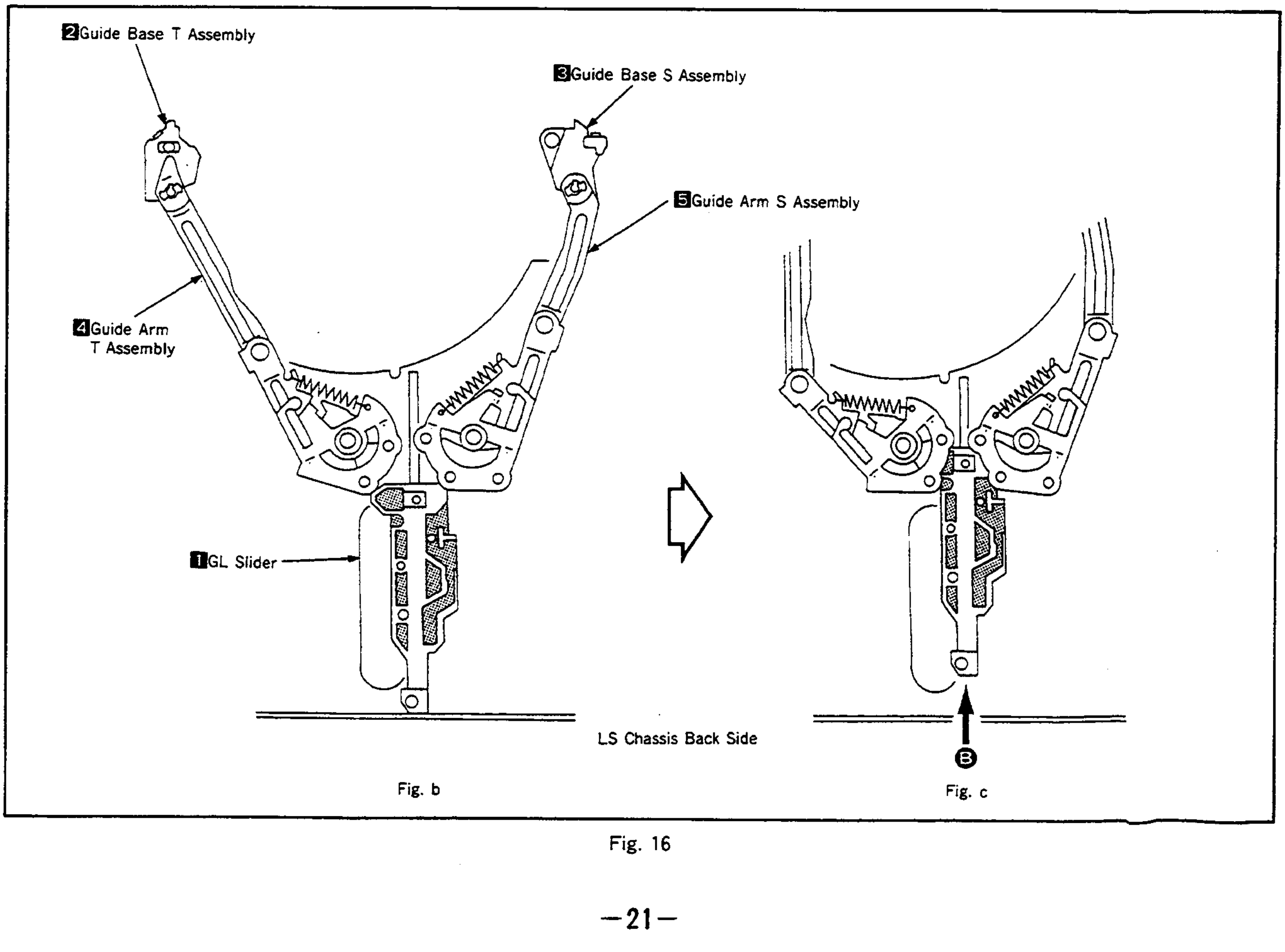

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

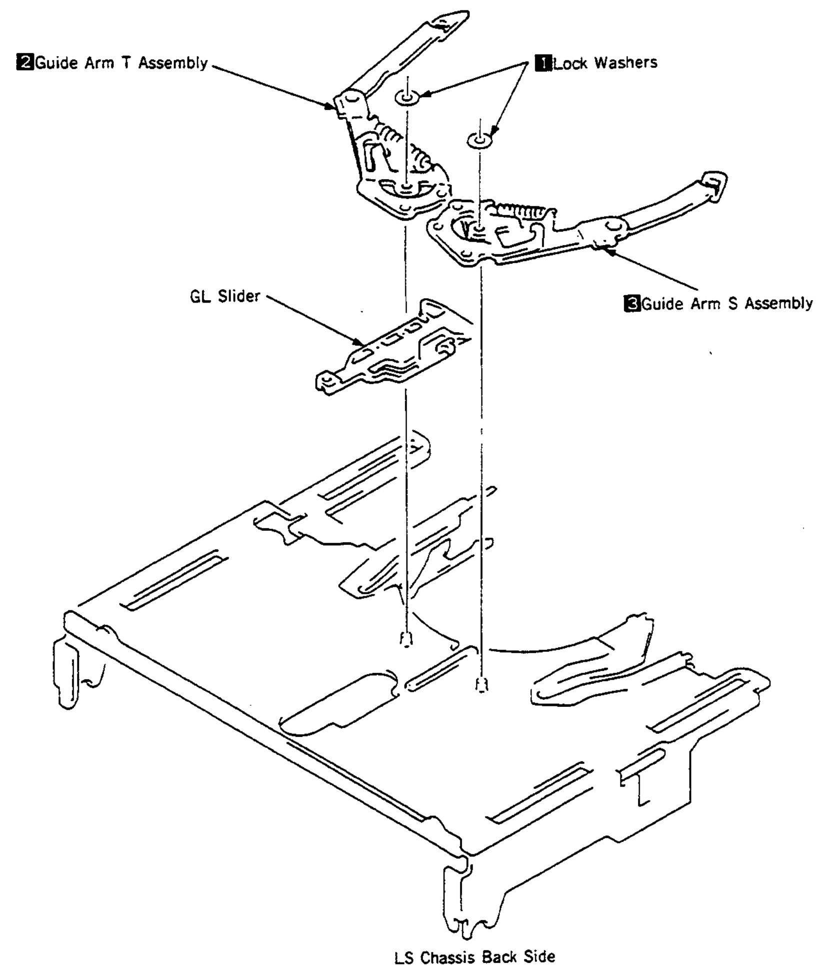


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake ❼ toward the arrow Ⓑ, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow Ⓒ and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

Note : Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

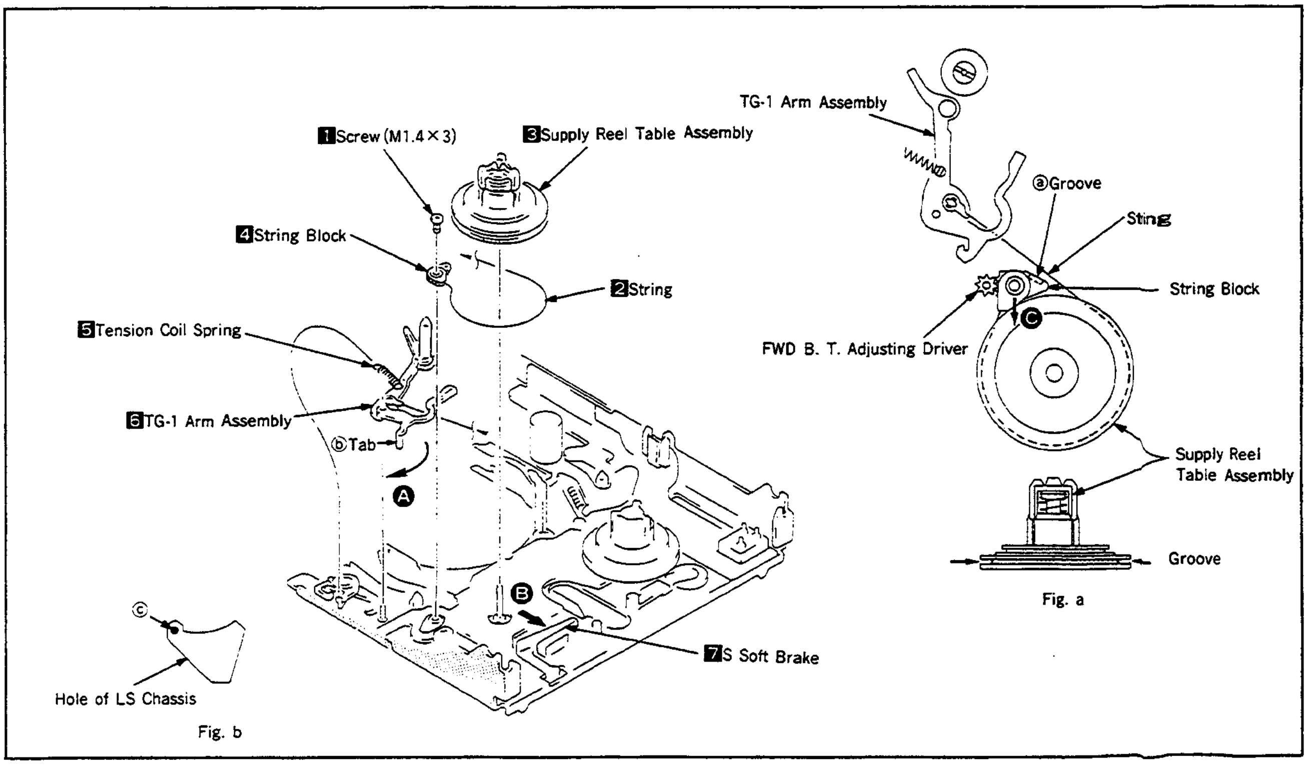

❶Screw (M1.4×3)
❸Supply Reel Table Assembly
❹String Block
❷String
❺Tension Coil Spring
❻TG-1 Arm Assembly
ⓑTab
Ⓐ
Ⓑ
❼S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐGroove
Sting
String Block
Ⓒ
FWD B. T. Adjusting Driver
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly 1 .
2) Remove a compression coil spring 2 .

2.Mounting

1) Insert a compression coil spring 2 into the boss on chassis.
2) Rotate gently the TG-2 roller assembly 1 until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

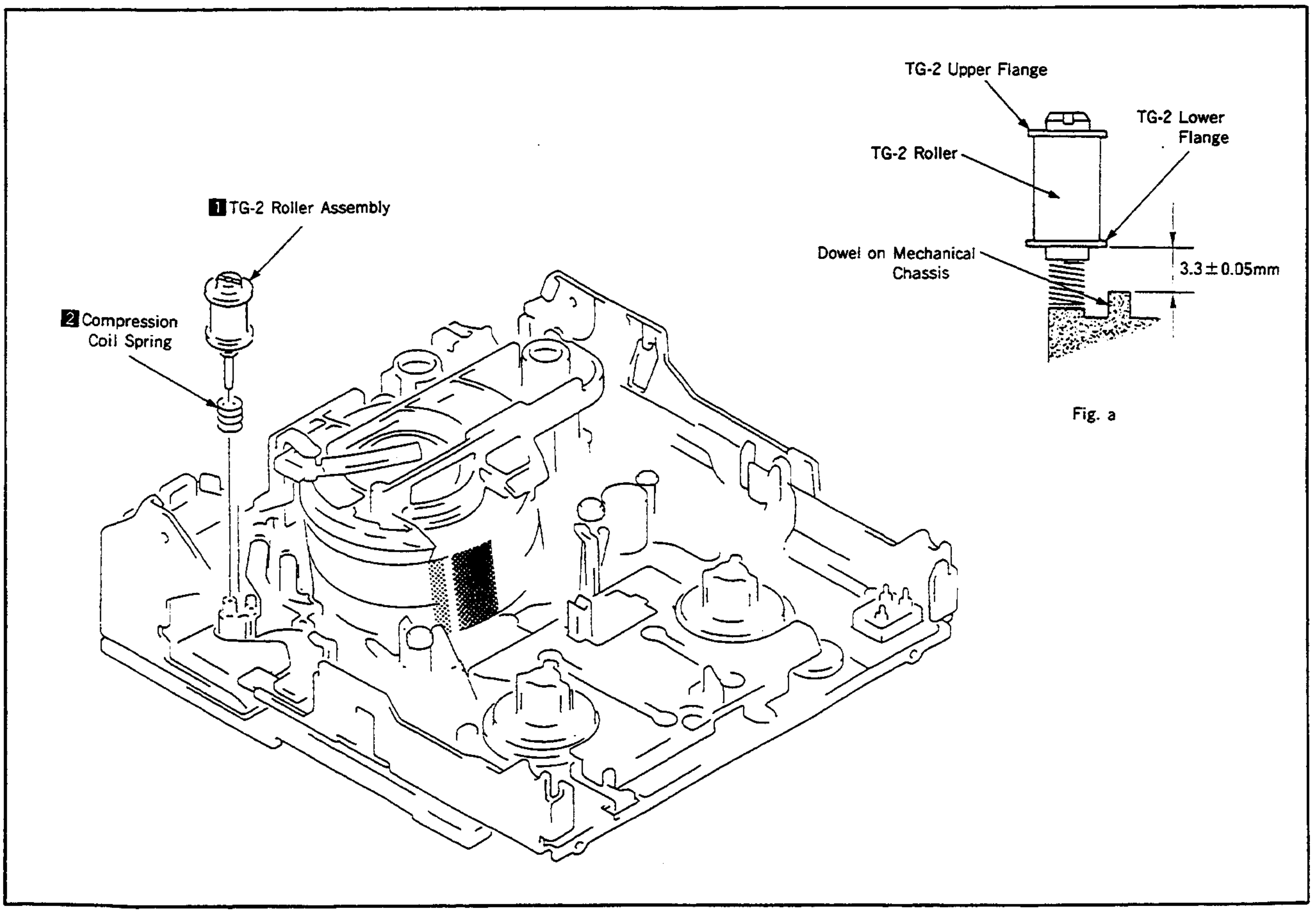

TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a
1 TG-2 Roller Assembly
2 Compression Coil Spring

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalchasis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

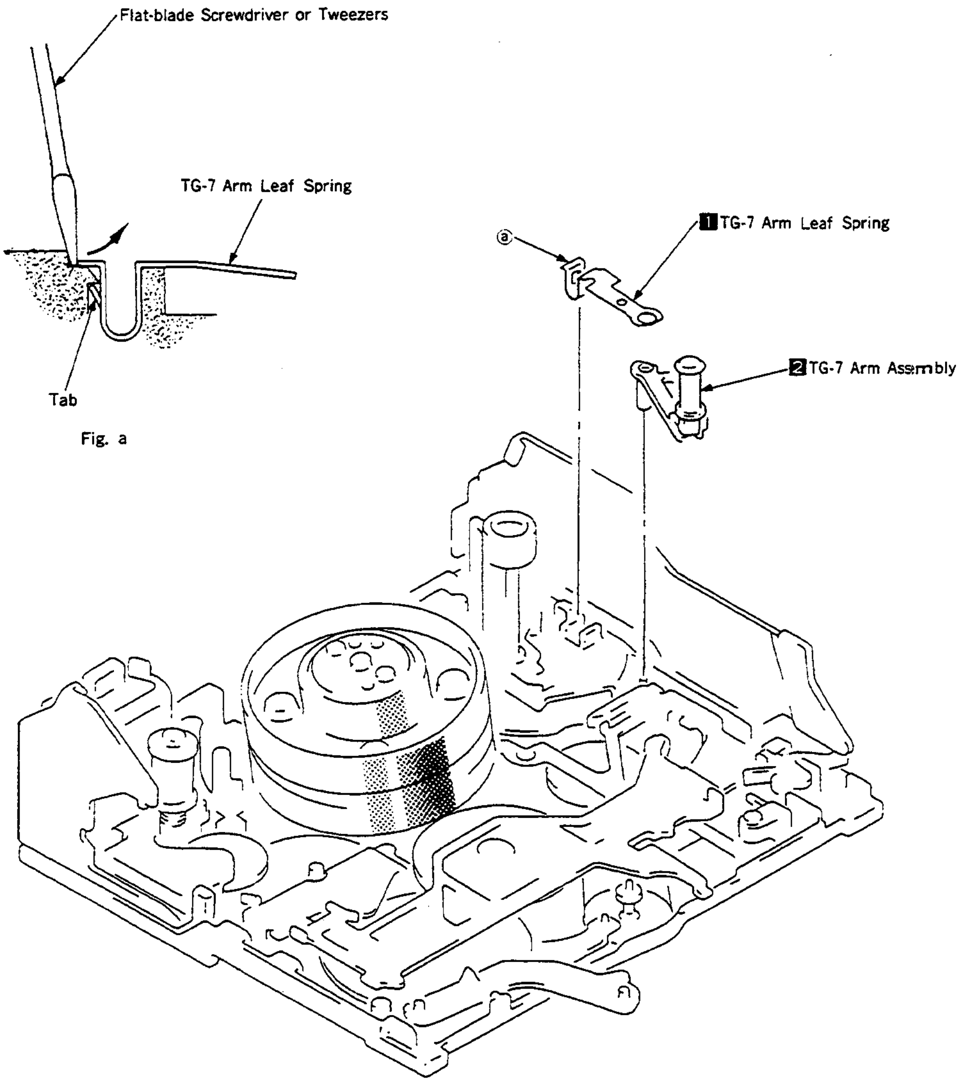


Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw **1**).
6) Remove two screws **1**, then the LM motor assembly **2**.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly **2** with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws **1**.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

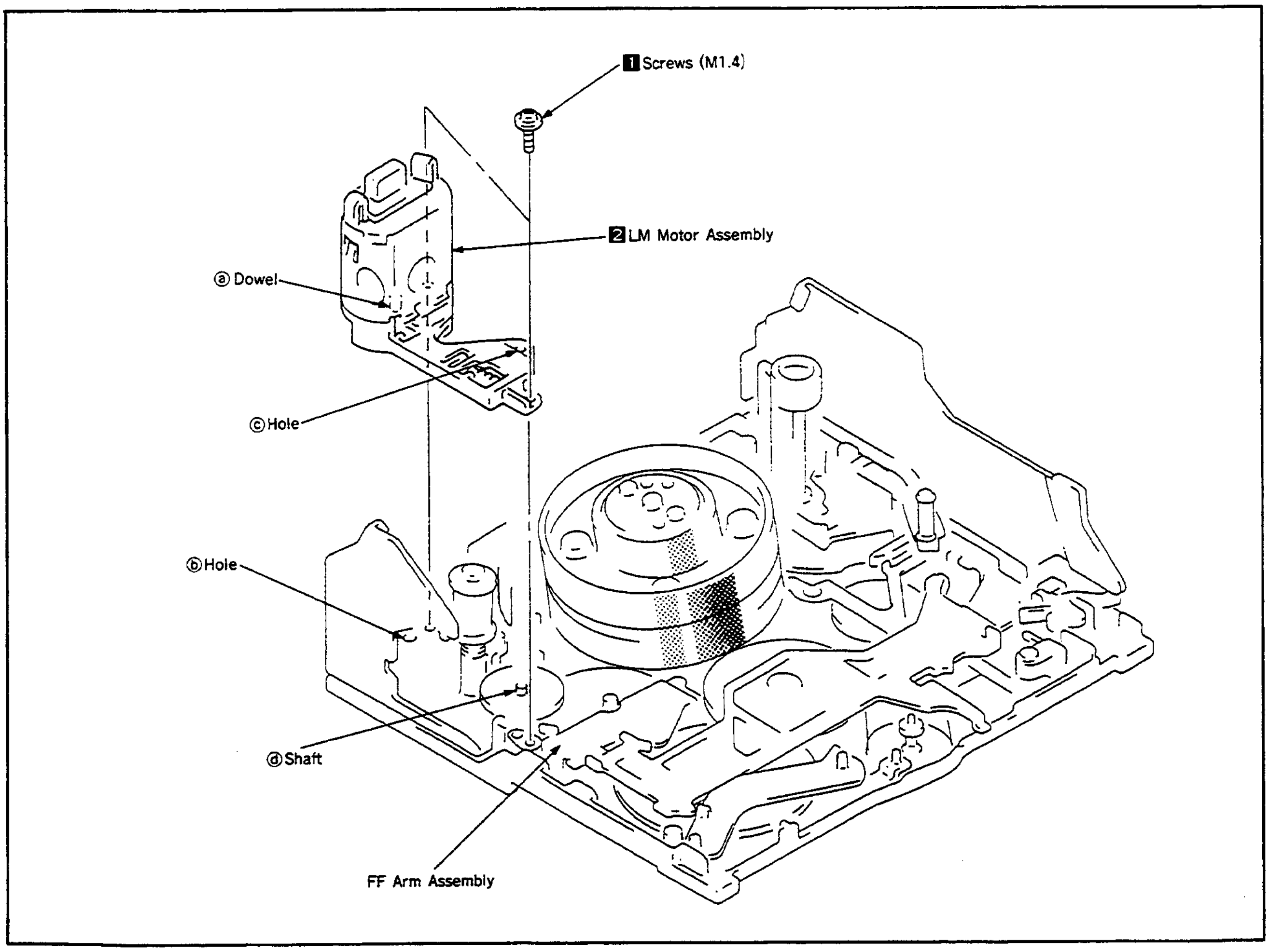


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

Note : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

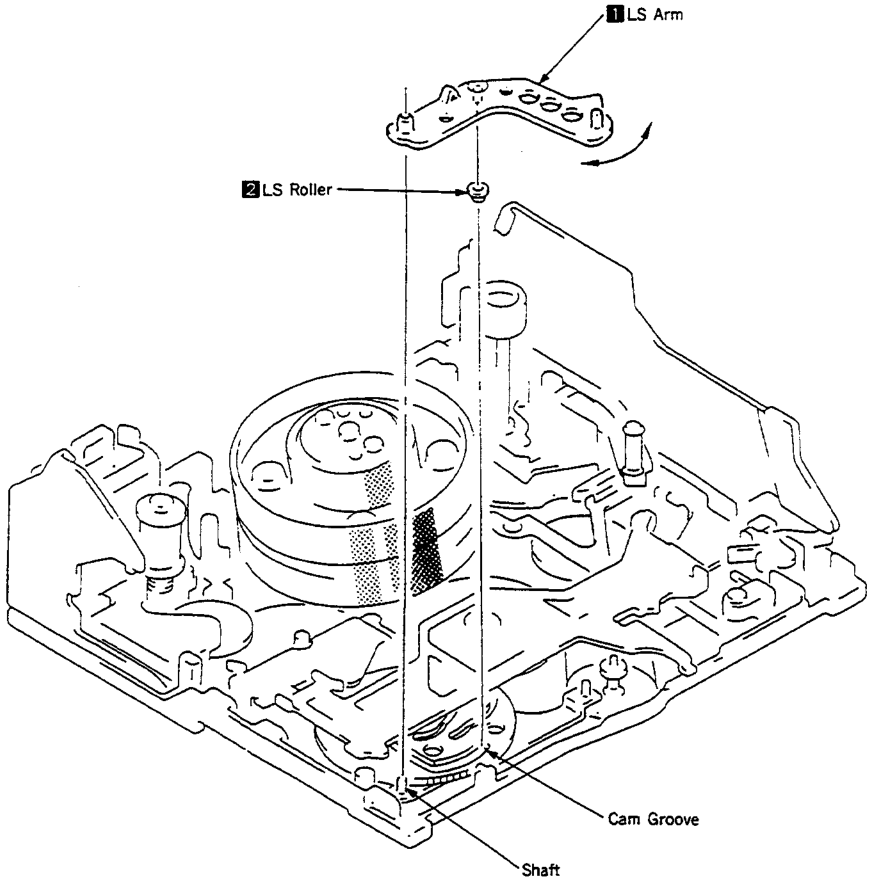


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

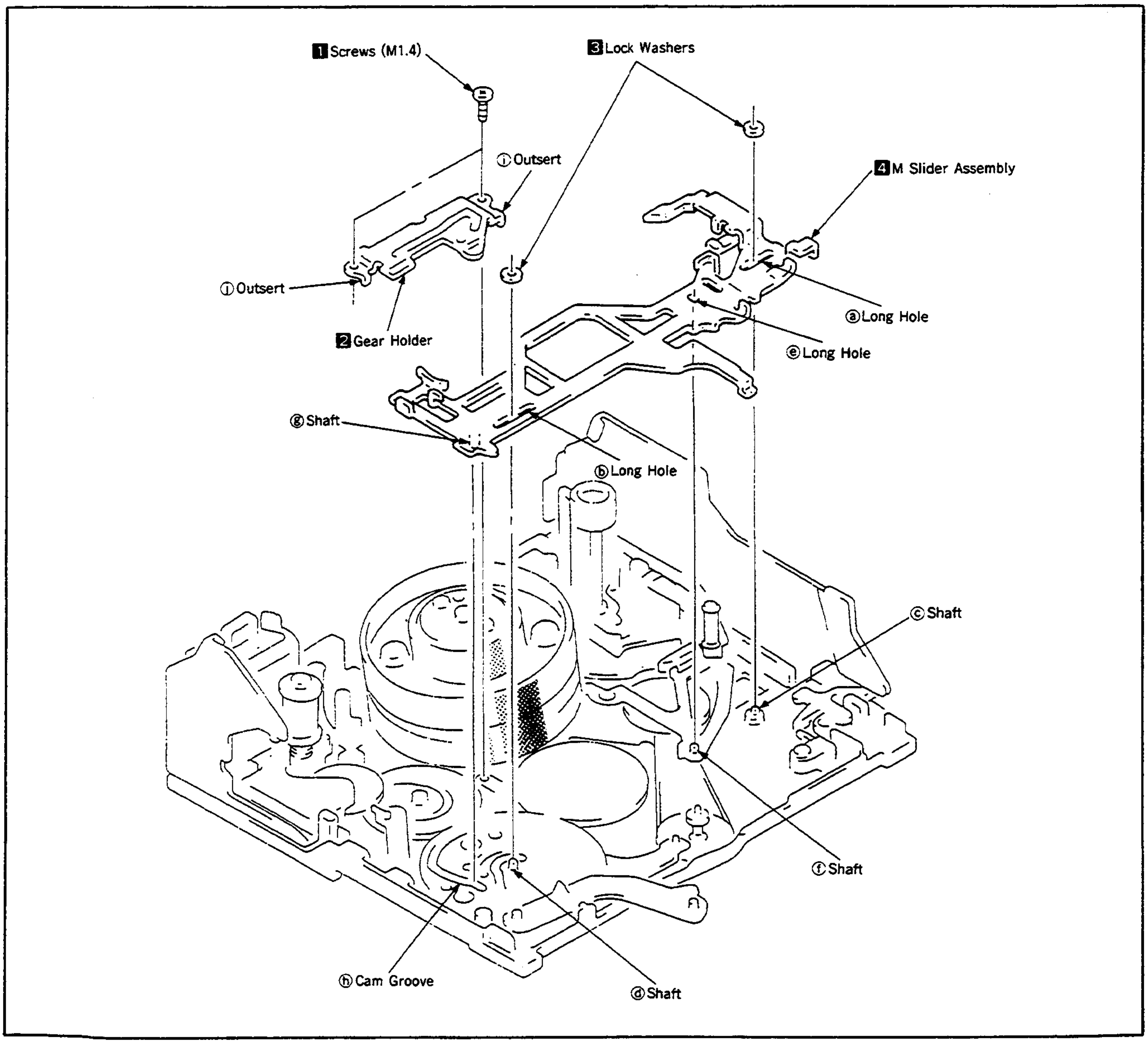

❶Screws (M1.4)
❸Lock Washers
ⓘOutsert
❹M Slider Assembly
ⓙOutsert
ⓐLong Hole
❷Gear Holder
ⓔLong Hole
ⓖShaft
ⓑLong Hole
ⓒShaft
ⓕShaft
ⓗCam Groove
ⓓShaft

Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

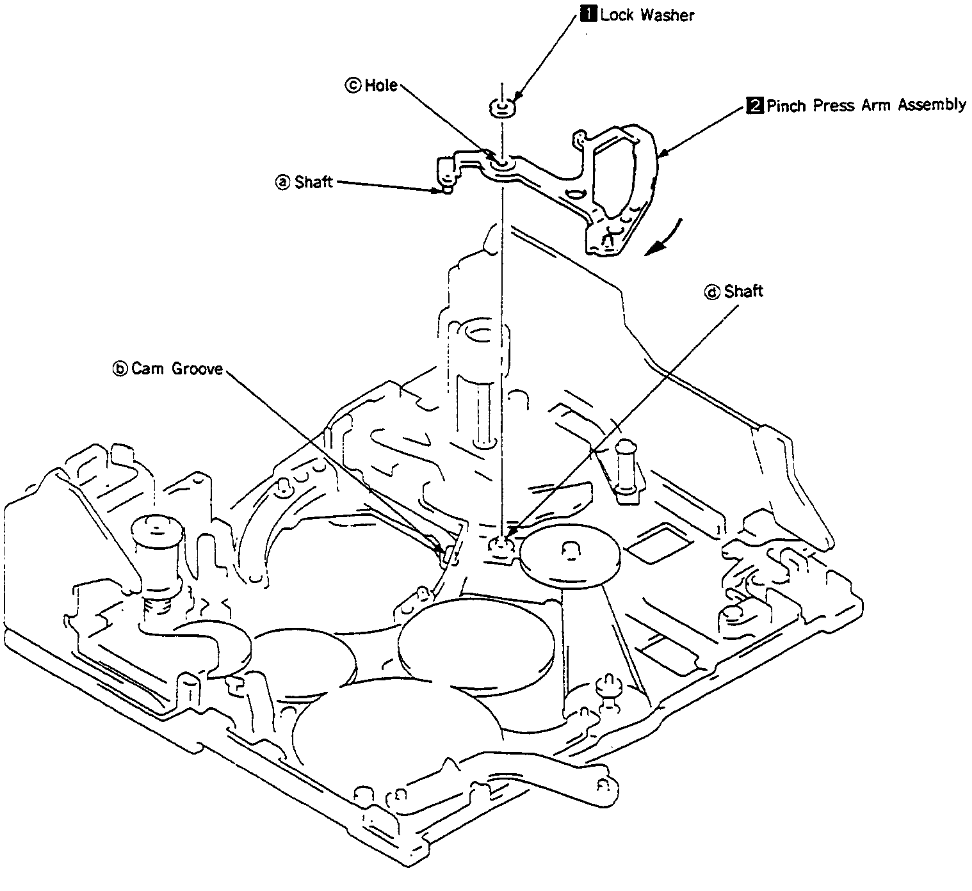


Fig. 24

. CAM (Fig. 25)

Removal

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam **1**.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam **1**, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

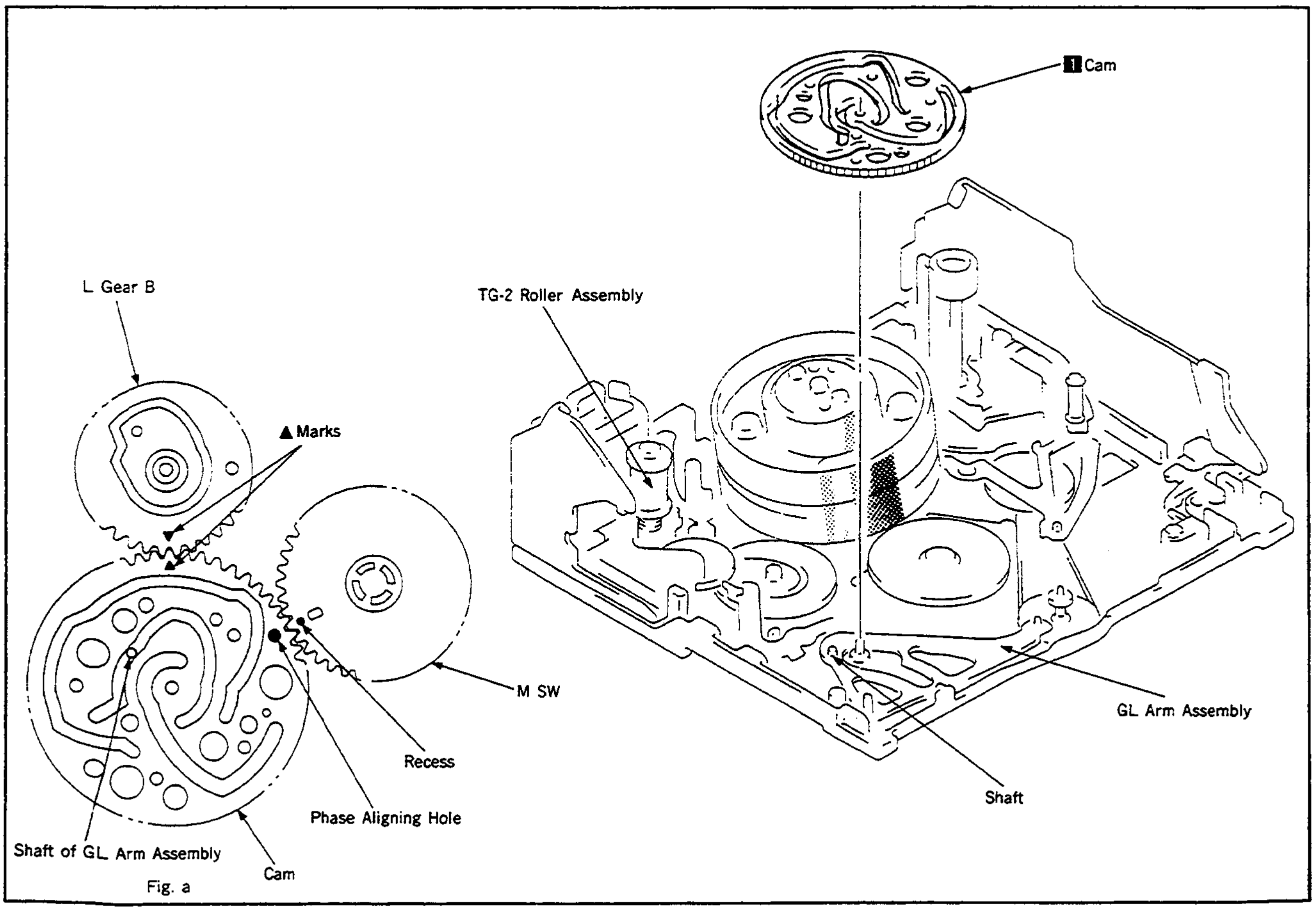


Fig. a

Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly ■.

2. Mounting

1) Mount the GL arm assembly ■ with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

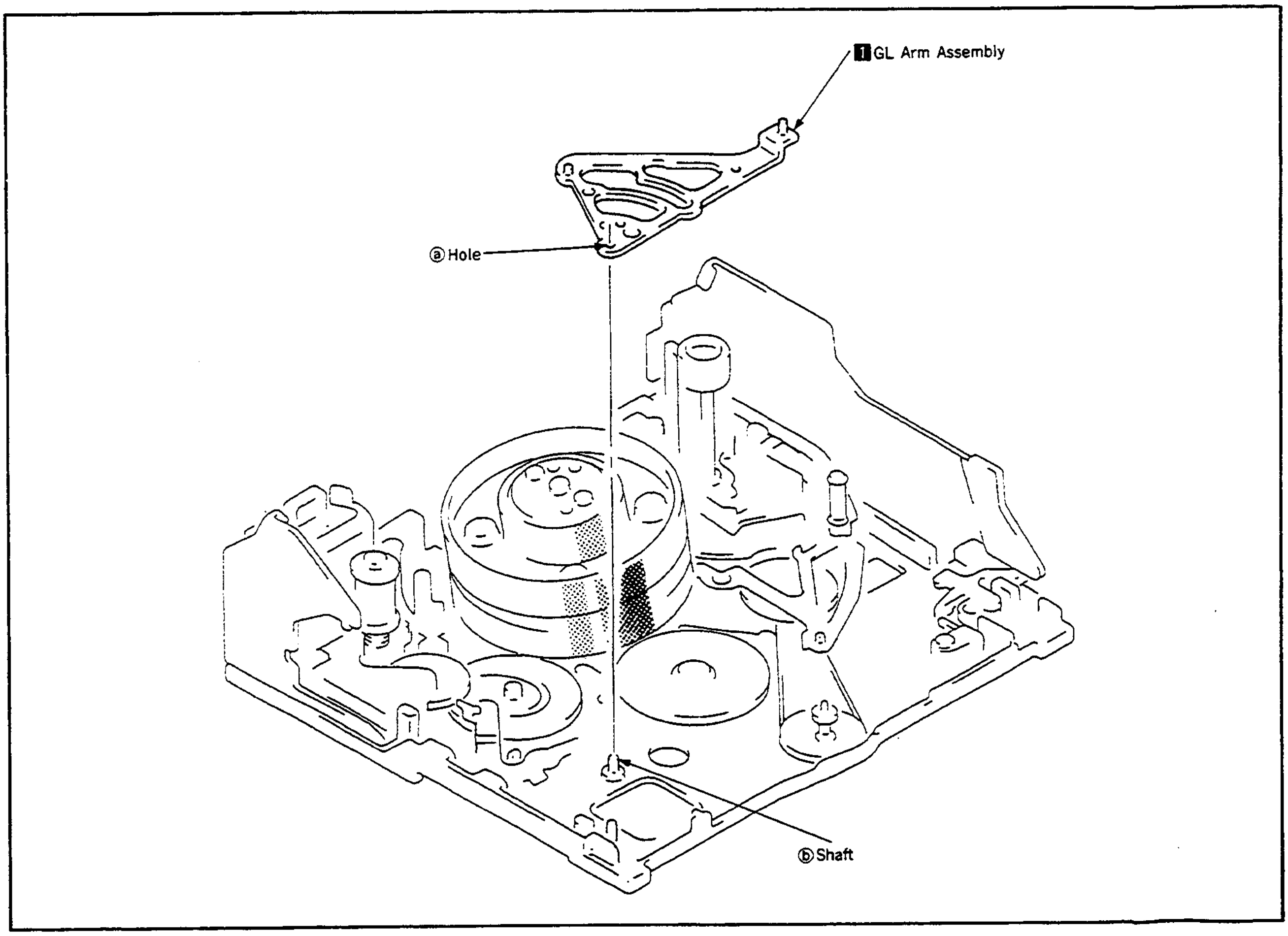


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

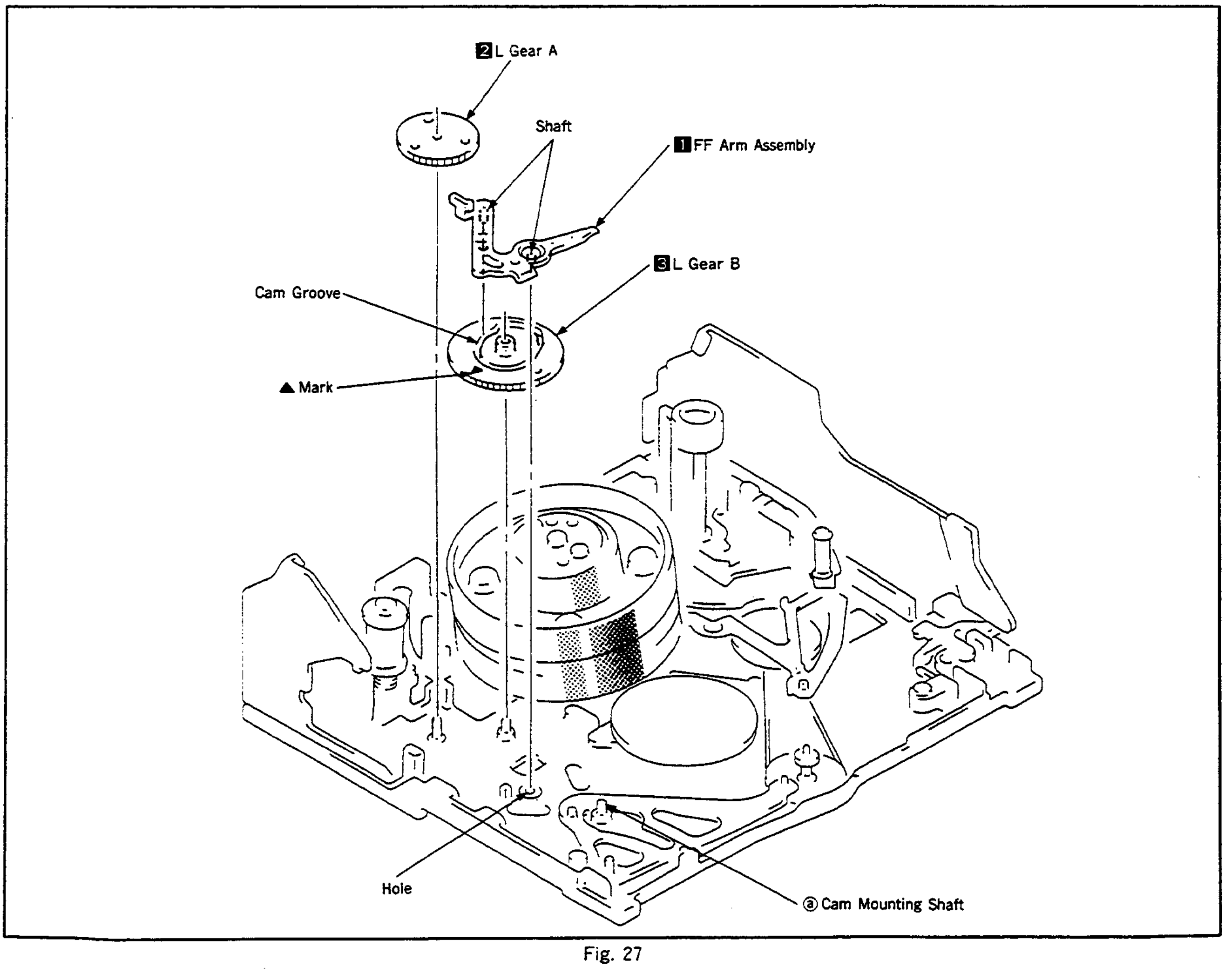


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer ❶, then remove together the Change gear assembly ❷, relay belt ❸ and relay pulley ❹.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt ❸ to the relay pulley ❹ and Change gear assembly ❷, mount respective parts.
*At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer ❶.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

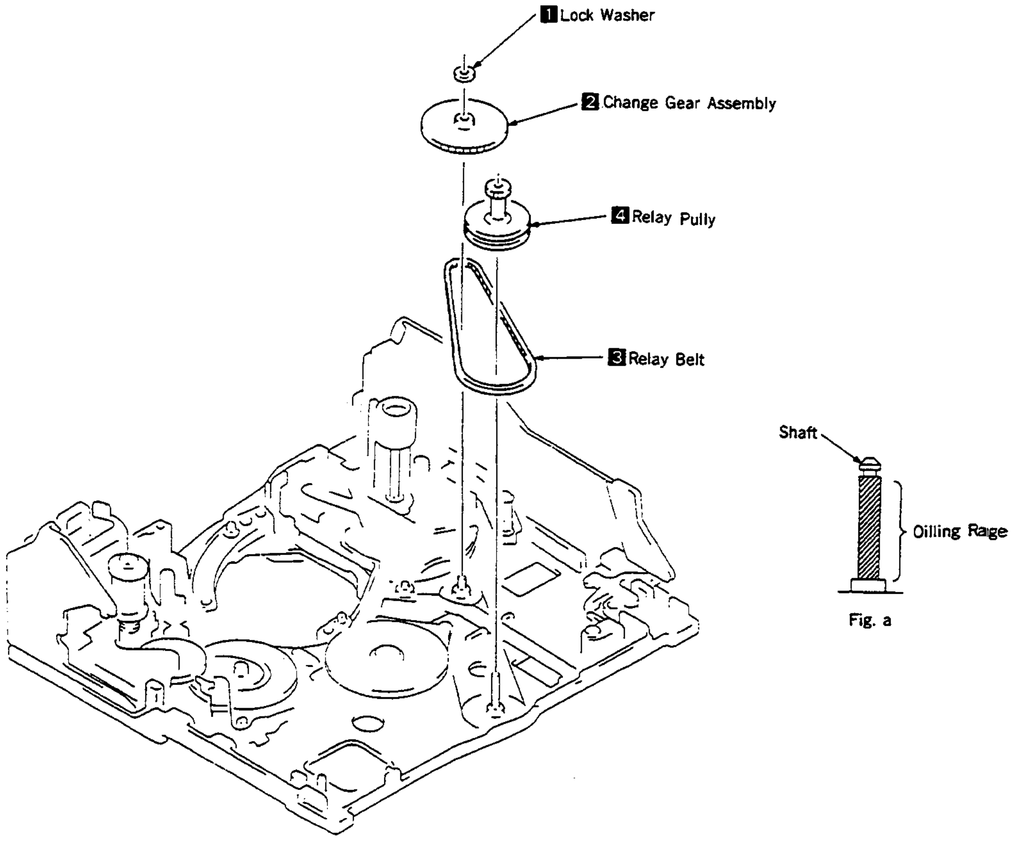


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

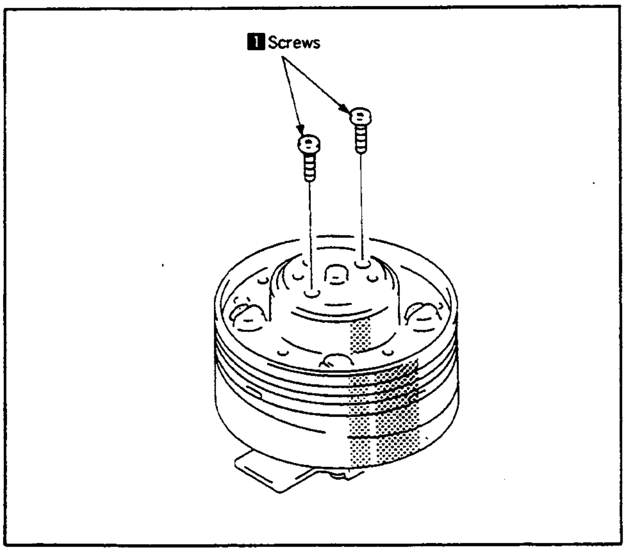


Fig. 29

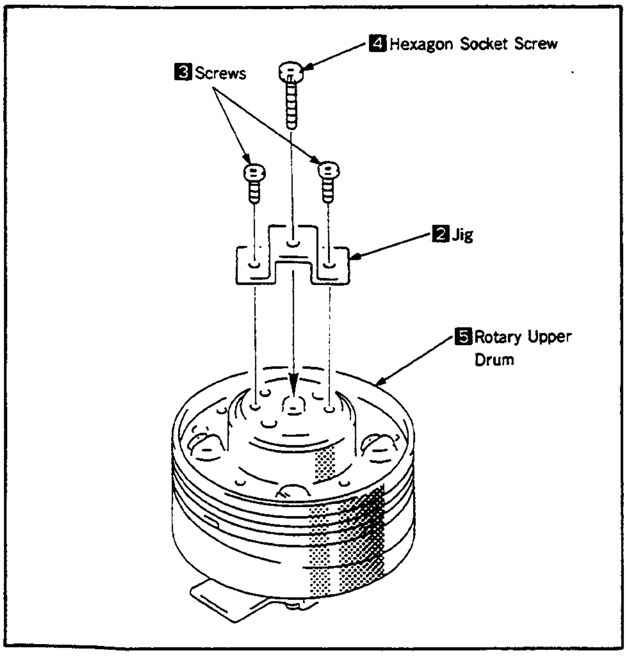


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

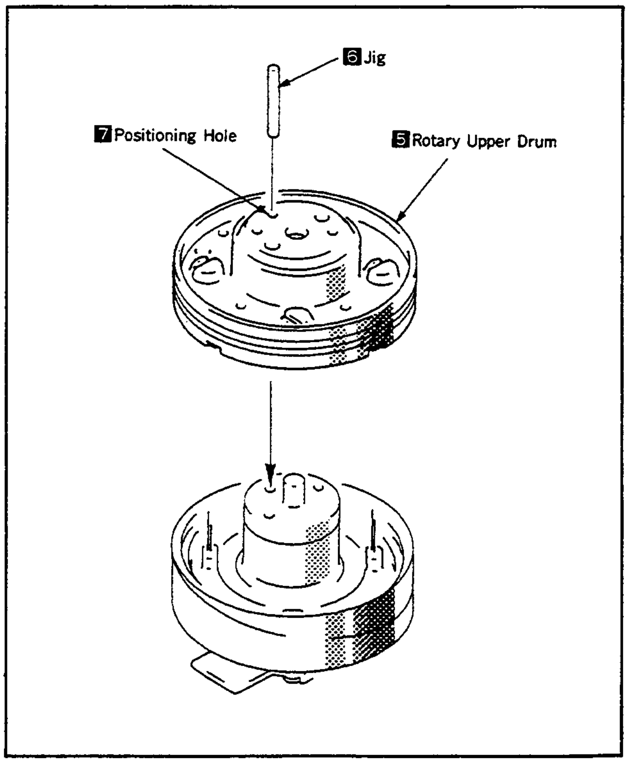


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

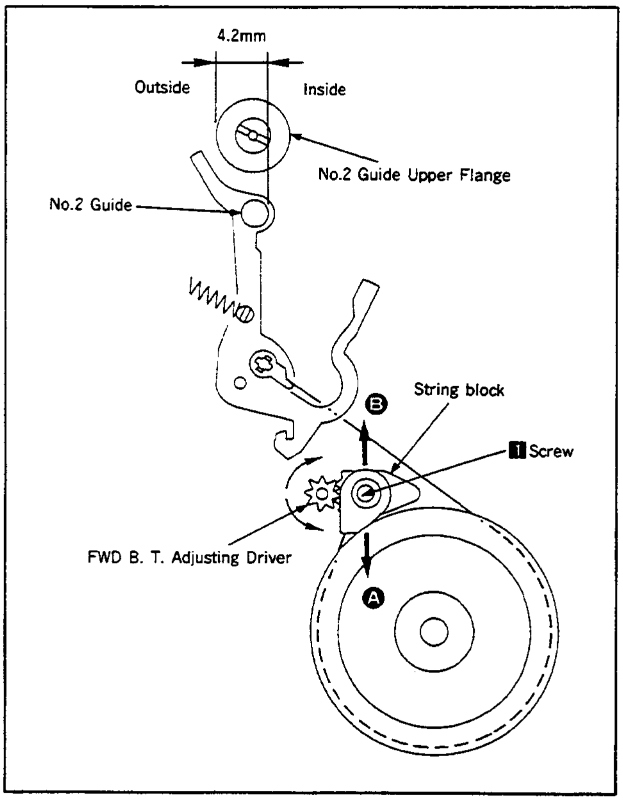

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
❶ Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

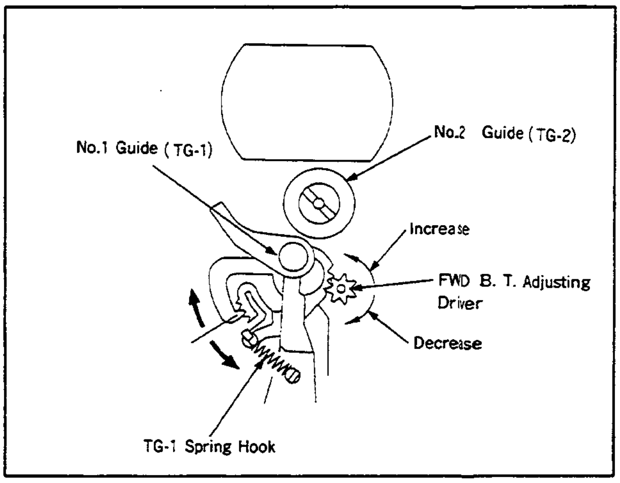

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

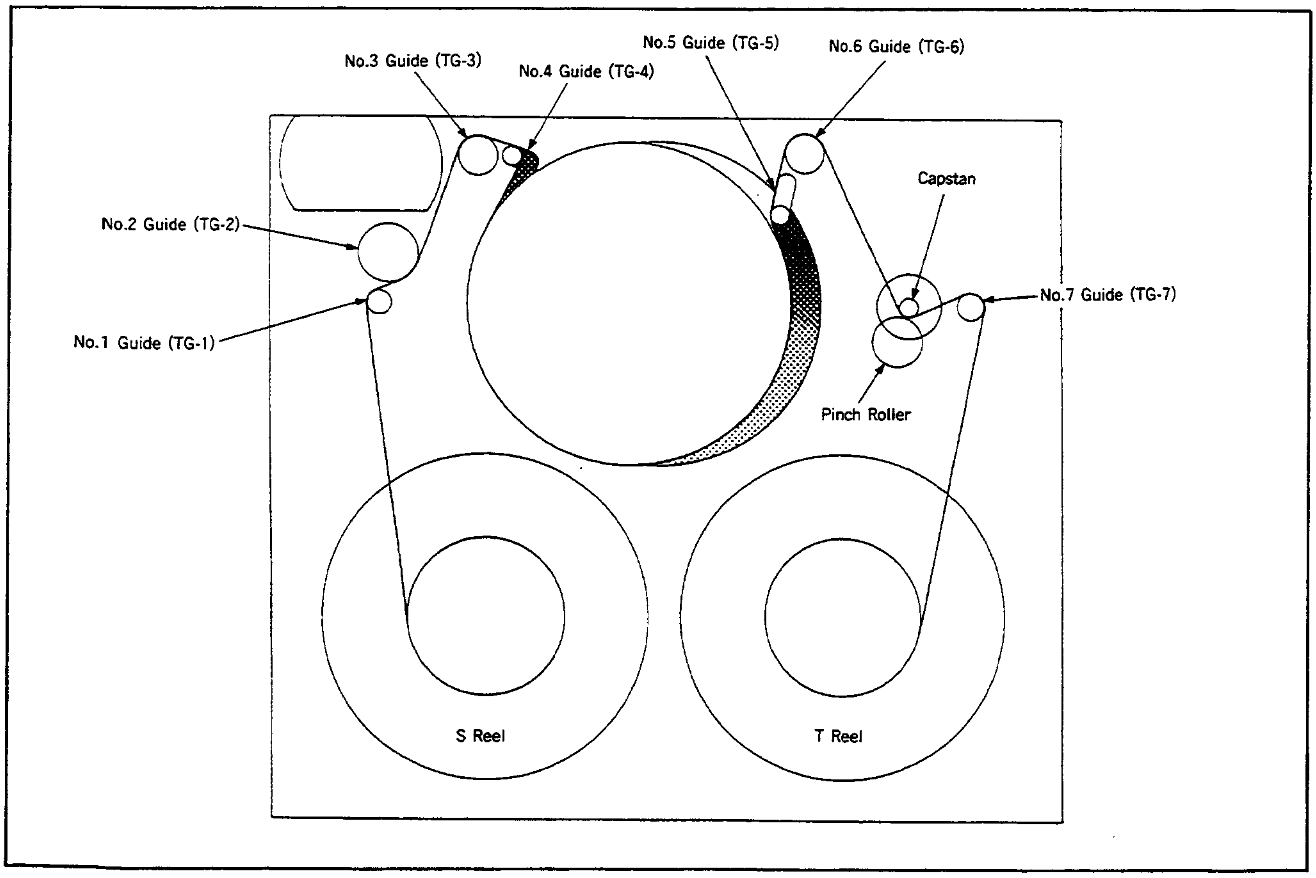


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).
Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

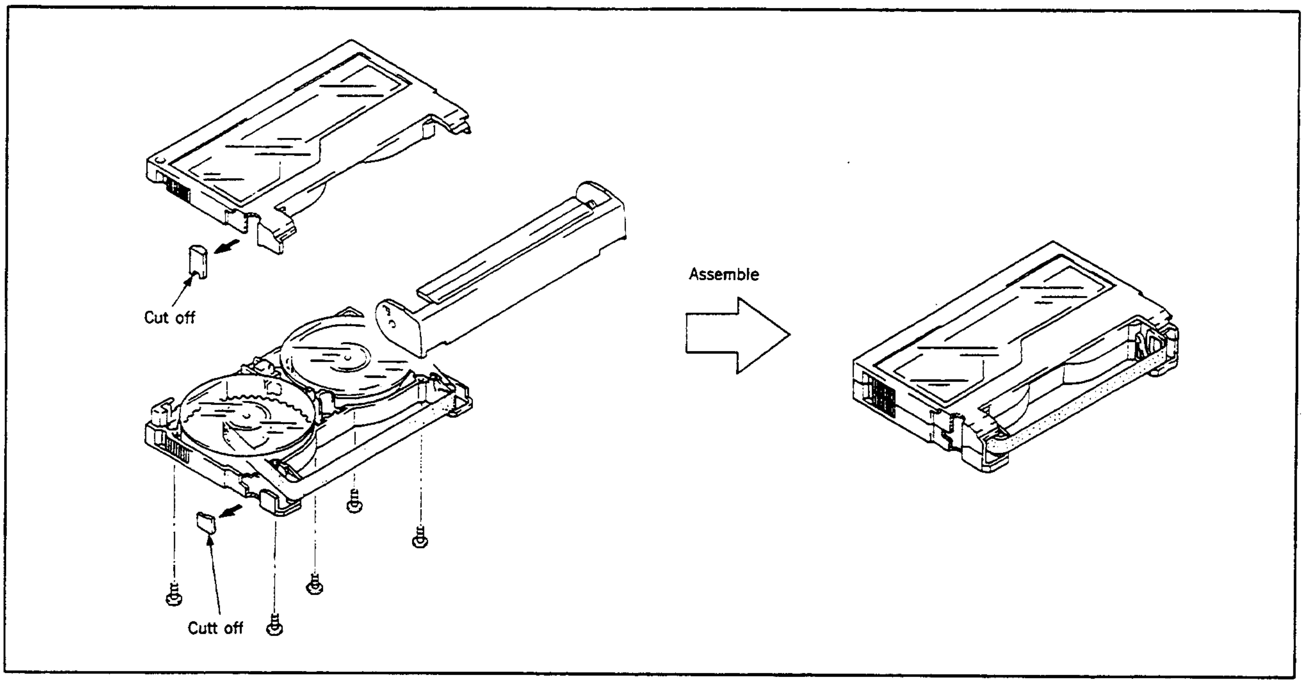


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
      CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
      CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

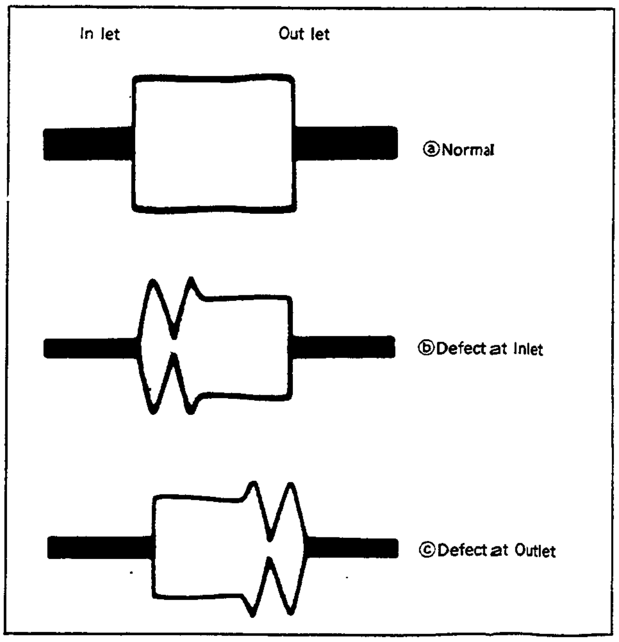


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw **1** and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw **1** to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw **2** and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw **2** to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

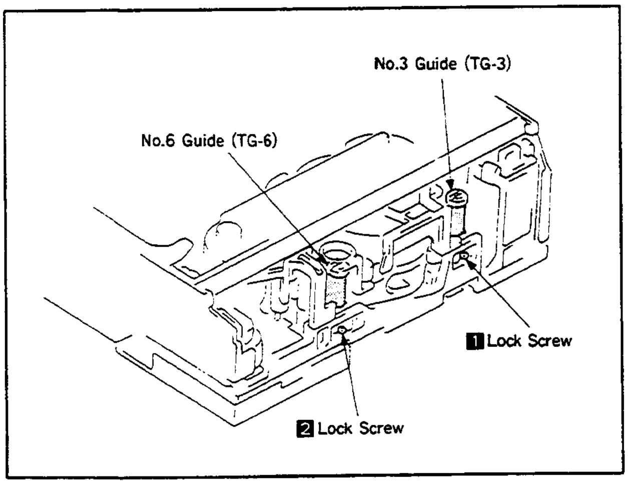


Fig. 36

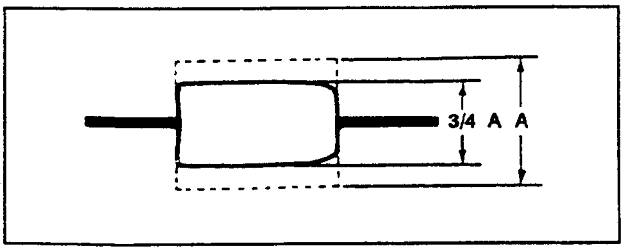


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

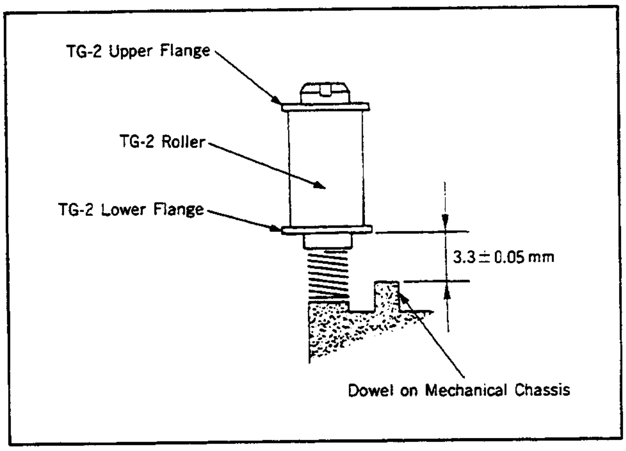


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange **2** of the No.2 guide (TG-2) **1** (Fig. 39). If it is, turn the upper flange **3** of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange **3** of the No. 2 guide (TG-2) **1** 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

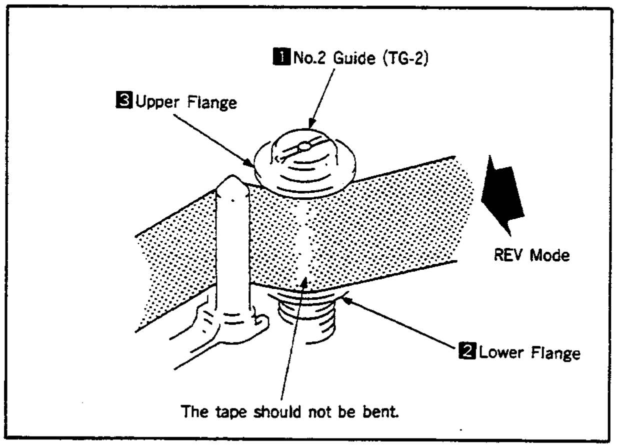


Fig. 39

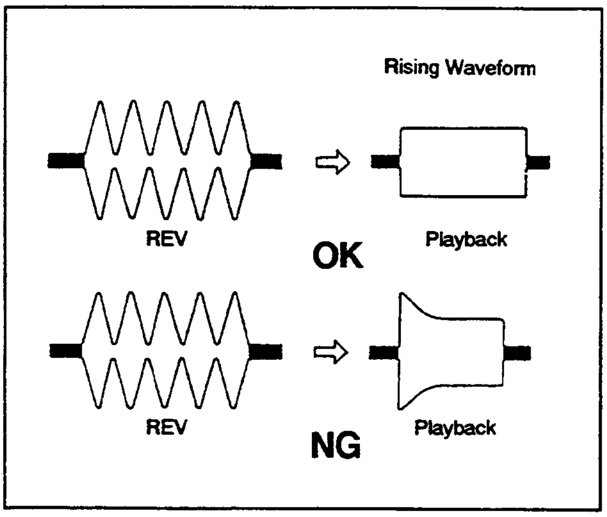


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) **1** and the capstan **2**. If it is, turn the hight adjusting screw **4** of the No.7 guide (TG-7) **3** until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan **2** and the hight adjusting screw **4** of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) **3** until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) **1** and the capstan **2** is 0.3mm or less, adjustment can be considered completed.

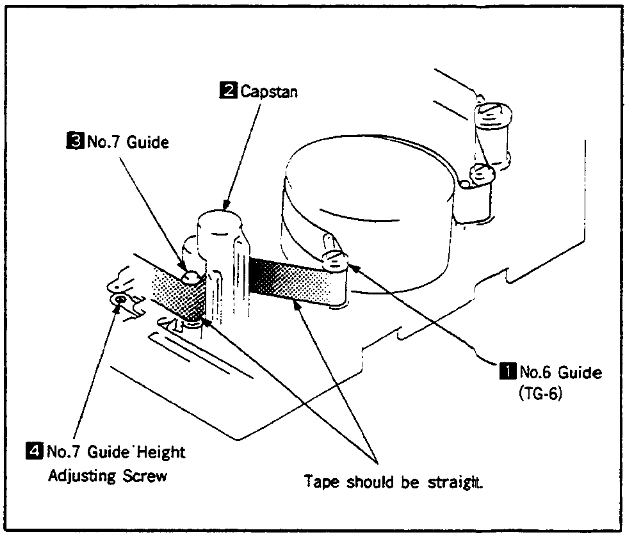


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

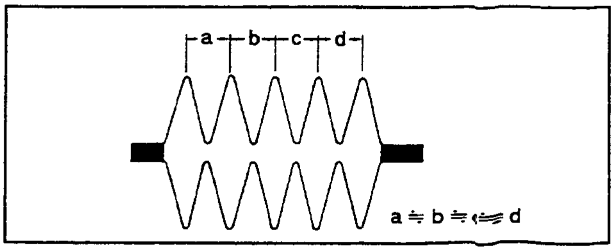


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

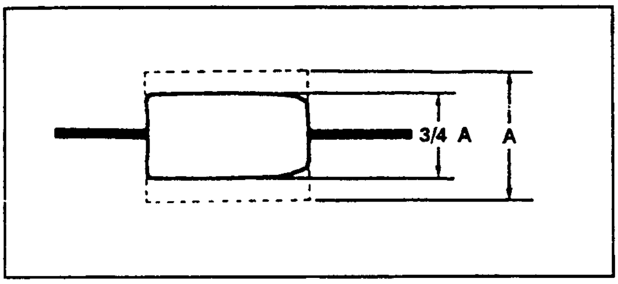


Fig. 43

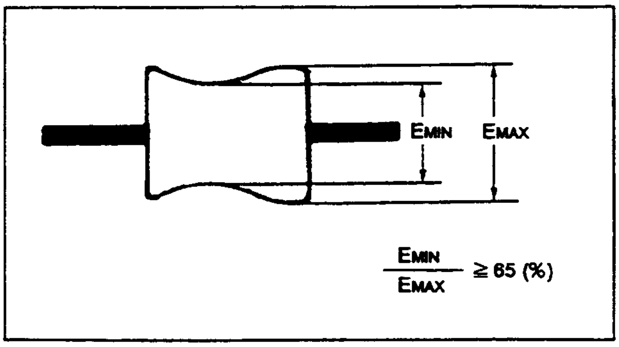

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

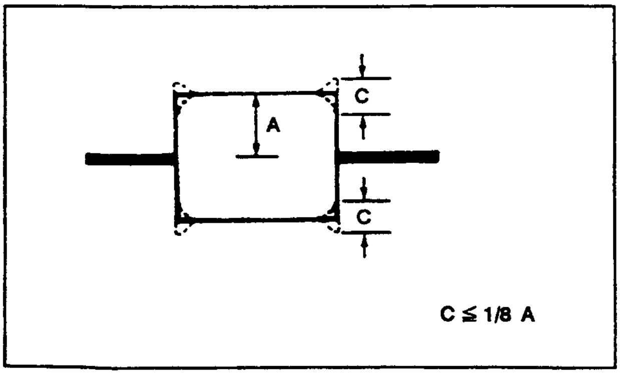


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

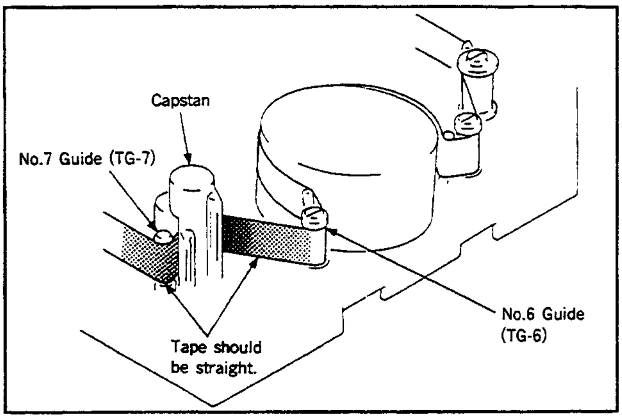

Capstan
No.7 Guide (TG-7)
No.6 Guide (TG-6)
Tape should be straight.

Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

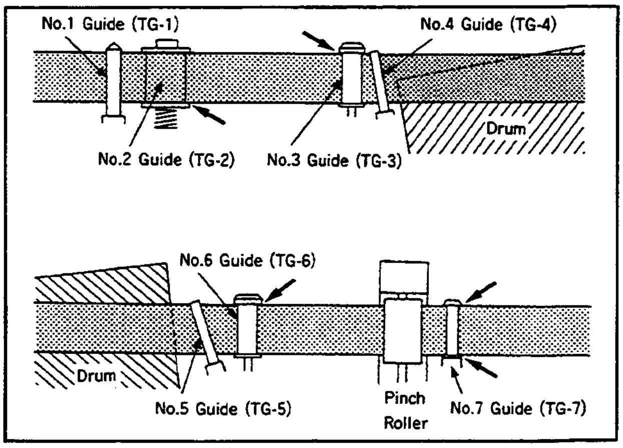

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

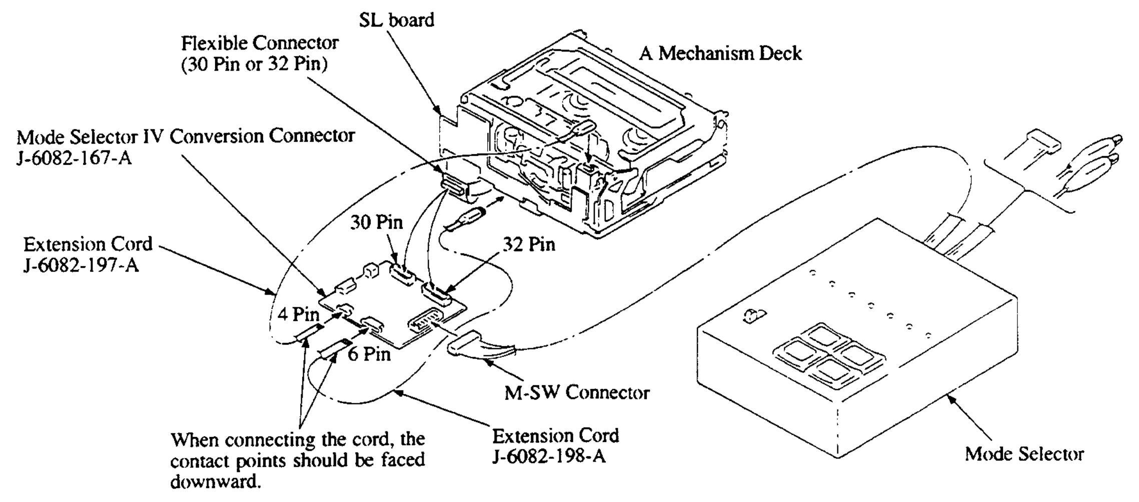
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord (J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
Extension Cord
J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord
J-6082-198-A
Mode Selector

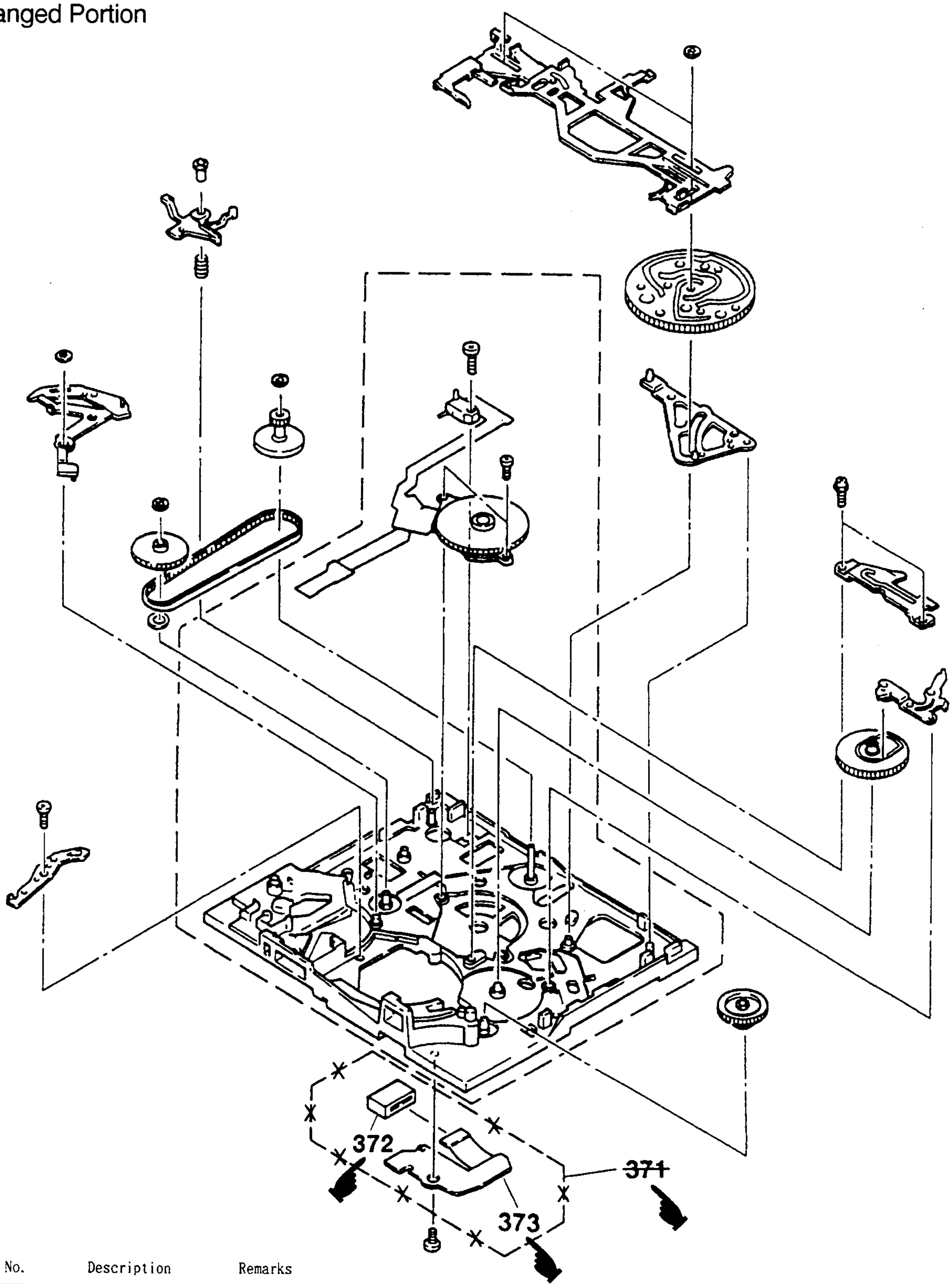
〈CORRECTION〉

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➔	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

9-973-199-84

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Personal Video Group

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